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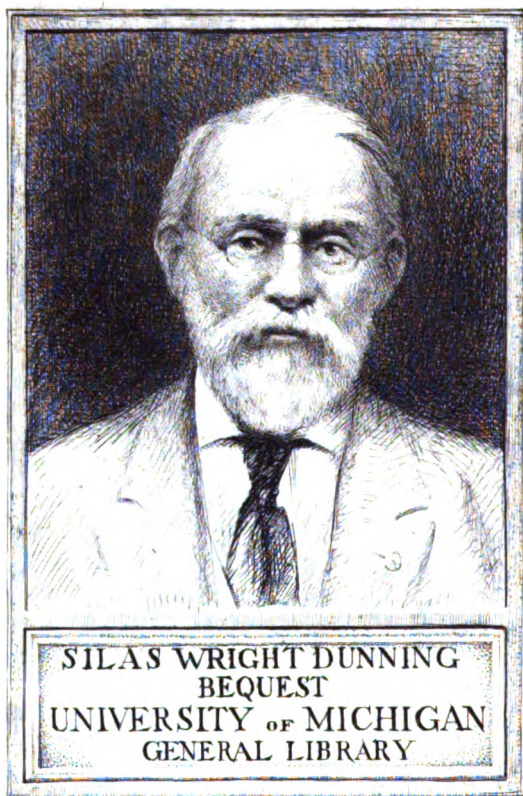




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SILAS WRIGHT DUNNING
BEQUEST
UNIVERSITY OF MICHIGAN
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During the year 1886, from April to
October, I held the Secretaryship of
the U. S. F. of India. As may be seen
by the Extract from the Times of
India which I have inserted at
the beginning of Part LXIII of Vol.
XIV, the first N^o. of the Journal
published under my auspices met
with approval. During my tenure
of the Secretaryship I wrote my
Essay on "The Formation of a
Railway Service Corps from the
North-Western Railway" which won
the Gold Medal for 1886. Vide
Vol. XV, N^o. LXVII pp. 109-161. Fur-
ther, when Commanding a Company
of Mounted Infantry in Burma in
1886-7 I contributed one or two papers
on Mch. Infantry which are printed
in this volume. Vide pp. 237 & 311 of Vol. XV
N^o. 68.

Dunning
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NOTICE.

MEMBERS of the Institution, who have not already done so, are requested to pay their arrears of subscription.

If a member does not pay his subscription for the current year (ending 31st May) before the 1st of January, a printed notice will be sent to him by the Secretary; and if the subscription be not paid by the 1st June following, the defaulting member's name will be struck off the roll from that date.

Gentlemen who may wish to become members are requested to be kind enough to forward their donations and subscriptions at the time they express a wish to join the Institution.

Members can pay their subscription to the Alliance Bank of Simla, Limited, if more convenient to themselves, and the Bank will grant receipts for any money sent. Money Orders, Transfer Receipts, &c., should be made payable to the "Secretary."

The entrance fee is Rs. 5, and the annual subscription Rs. 5.

Secretaries of Non-Commissioned Officers' Messes, and of Regimental Libraries and Reading Rooms, can obtain the Journal of the Institution by only paying the amount of the annual subscription. No entrance fee is charged.

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Members on return from furlough can obtain the numbers of the Journal that have been published during their absence, by paying the subscription for that period; and all members on returning to India should inform the Secretary of the fact.

The Secretary will be happy to send, free of charge, an Index to Volumes.

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When, however, a member joins the Institution on or after the 1st March, having paid his first annual subscription, he will not be charged a second subscription on the following 1st June, but it will become due on 1st June of the second year.

It is particularly requested that both letters and remittances may be addressed to the "Secretary," and not to the officer holding that post by name.

Libraries and Reading Rooms are eligible to subscribe to the Institution.

By Order of the Council,

W. E. GOWAN, MAJOR,

Secretary.

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By Order of the Council,
O. E. WHEELER, *Lieut.,*
Secretary.

United Service Institution of India.

NOTICES.

EXTRACTS from the PROCEEDINGS of the Executive Committee of the Council assembled at Simla on 3rd October 1883.

- * * * *
2. Question of admitting the general public to the lectures.

Resolved,—That admission be free and general as at present, but that a certain part of the room be reserved for members and their friends accompanying them. The Secretary to make the requisite arrangements.

3. Question whether a paid reporter be employed by the Institution to record (a) the lectures, and (b) the discussions.

Resolved (a),—That it is unnecessary to employ a reporter for the lectures. The Secretary should ask the lecturer to supply a copy of his lecture in writing for publication.

(b) That the Secretary be requested always to engage a reporter to note down the *discussions*; that he be paid what is necessary; and that his report be revised by the Secretary before publication.

4. Question whether accommodation be reserved for representatives of the Press desirous to report lectures or discussions.

Resolved,—That every facility be given to the Press for this purpose, and the Secretary is to notify this resolution to any newspapers wishing to report lectures, &c.

* * * *

Device for Journal of Institution.

6. Question whether a device and motto should be adopted for the cover and title page of the Journal.

Resolved,—That the Secretary be requested to take measures to have this done. The design to be approved by the Executive Committee before adoption.

* * * *

Contents of Journal.

8. Question whether a section should be added to the Journal to consist of "Occasional Papers," &c., &c., as is the practice in the Journal of the Royal United Service Institution.

Resolved,—That the proposal be adopted.

* * * *

Financial year of United Service Institution of India.

10. Question whether the financial year of the Institution should be held to commence from 1st January instead of from 1st June, as at present.

Resolved,—That the present practice be maintained.

EXTRACTS *from the PROCEEDINGS of the Executive Committee of the Council at a Meeting held at Simla on the 11th October 1883.*

Rule regarding contributions to Journal.

2. Question whether the manuscripts of original papers sent for publication in the Journals or in competition for a prize should be returned to the writer or not.

Resolved,—That the papers be not returned except the writer expresses a wish to have them back, and pays the postage. A notice to this effect to be inserted in each number of the Journal.

EXTRACTS *from the PROCEEDINGS of the Executive Committee of the Council at a Meeting held at Simla on 16th November 1883.*

Grace allowed in payment of subscriptions.

II. *Question*—Whether the practice of the Royal United Service Institution of London, in excusing members who join the Institution within three months of the commencement of the financial year, the payment of subscription for the year in which they join, be adopted.

Resolved,—That the practice of the English Institution be adopted.

The new Rule to run as follows :—

“ When a member joins the Institution on or after the 1st March, having paid his first annual subscription, he will not be charged a second subscription on the following 1st June, but it will become due on 1st June of the second year.”

Rules regarding Defaulting Members.

IV. *Question*—Whether members who fail to pay their subscriptions be struck off the rolls ?

Resolved, that if a member does not pay his subscription for the current year (ending 31st May) before the 1st January, that a printed notice be sent to him by the Secretary ; and that if the subscription be not paid by the 1st June following, the defaulting member's name be struck off the roll from that date.

With reference to the first of the above extracts the Council of the Institution invite the aid of members or of visitors to Simla in carrying out a course of lectures or of papers to be read during the season of 1884.

SIMLA, }
May 1884. }

By order of the Council,
W. E. GOWAN, MAJOR,
Secy., U. S. Institution of India.

The Council of the U. S. I. of India have much pleasure in directing the publication of the following letters in correction of an error made in a paper enclosed in the special journal No. 58, vol. XII of 1883.

No. 119.

FORT SAINT GEORGE, MADRAS,
26th February 1884.

From

COLONEL T. ROSS CHURCH, C.I.E.,
Commandant, M. Vol. Guards,

To

THE SECRETARY,
UNITED SERVICE INSTITUTION OF INDIA,

Simla.

SIR,—I have the honor to bring to your notice that in the appendix showing strength and organisation of the Volunteer Force in India published at page 223 of the Special Journal of the United Service Institution of India for December 1883, the date of formation of the Madras Volunteer Guards is given as 2nd July 1875. This should be 2nd July 1857. In the copy of "the Essay on the Volunteer Force of India its present and future" by Major E. H. H. Collen, kindly forwarded to me by that officer, the date is correctly given.

Also in the Essay by Major C. A. Dodd on the same subject, page 229, it is stated "the oldest Volunteer Corps is that at Nagpore, raised in 1860." This corps having been raised on 29th December 1860 is quite three years and six months junior to that under my command. There are at present 2 officers, 17 N. C. officers and 2 volunteers who have served close on twenty-seven years uninterruptedly with the Madras Volunteer Guards, and who, with other members, naturally feel proud of belonging to by far the oldest Volunteer Regiment in India and jealous of the claim made to that title on behalf of any other.

May I beg the kind favor of publication of this letter in one of the next issues of your valuable journal.

I have the honor to be

SIR,

Your most obedient servant,

T. ROSS CHURCH, COLONEL,
Commandant M. Vol. Guards.

ALLAHABAD, 6th April 1884.

To

THE SECRETARY,
UNITED SERVICE INSTITUTION OF INDIA.

DEAR SIR,—I return the accompanying letter.* I thought I had gone very carefully over the records of the formation of the several corps but I now see that I overlooked Madras in quoting Nagpore as the oldest Volunteer Corps in India which I very much regret.

Yours faithfully,

C. A. DODD, LIEUT.-COL.

* See above.

The Journal

OF THE

United Service Institution of India.

VOL. XIII.

1884.

No. LIX.

ORIGINAL PAPERS.

I.

THE GERMAN MANOEUVRES AT HOMBURG, 1888.

An account by Lieut.-Col. O. B. MIDDLETON, The King's Own Royal Lancaster Regiment (2nd Battalion, 4th Foot.)

I WAS at Homburg for about three weeks, some little time before the manoeuvres, and took this opportunity of watching the drill and instruction given to the battalion of the 80th Regiment there stationed.

As far as I could ascertain from observation, the battalion, which consists of four companies, was exercised daily as follows :—

- (1.) A company was instructed in gymnastics, rifle exercises and what we should call Squad Drill in barracks
- (2.) Another company in Company Drill, also in barracks.
- (3.) Another company was exercised in Musketry Practice, or manoeuvring, which includes making field works, bridges, &c., &c.; whilst the fourth company took the duties.

They changed their occupation each day in succession.

The instruction was entirely under the superintendence of the captains.

Occasionally, however, the above routine is, I believe, suspended for Battalion Drill.

No. 1.—The men turn out for Squad Drill in fatigue dress (namely, canvas suits), with arms, accoutrements, and knapsacks; for the actual drill these are taken off. Each squad is under a non-commissioned officer. The Squad Drill is combined with gymnastics, the appliances for which are on the ground.

The Rifle Exercises are performed with knapsacks on; the Manual Exercise consists of the Shoulder (the same as our advance), the Present, the Slope, and the Order. The Present is in one motion, which looks to me very smart, and is much more easily taught than ours, which takes much practice to accomplish well. The Bayonet Exercise is performed with dummy rifles, the men are placed opposite to each other, and engage in points and parties.

At Firing Exercise, the men aim at black perpendicular lines drawn on the barrack walls and at canvas figures of both foot and mounted soldiers, which are moved about to various positions.

They are also trained in passing obstacles in Marching Order; there are ditches, banks, and walls made about 80 yards apart all round the barrack square, and squads double over this course about four or five abreast.

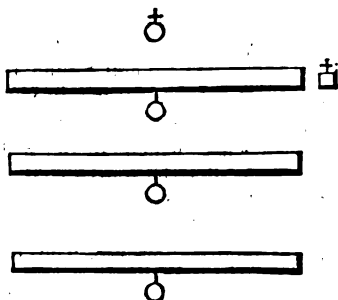
No. 2.—The company turns out in Marching Order, with old clothing : it is arranged in three ranks and is divided into half companies ; a subaltern is on the right flank of each, and when there is a third subaltern, I believe he is on the left of the company, but when there is not (which was always the case when I witnessed the drill) this position is taken by the company Sergeant Major. There is a fourth or supernumerary rank. In column of half companies the officers and non-commissioned officers retained the same position, except the Sergeant-Major, who is on the left flank of the leading half company. The company, which generally consisted of 32 to 36 files, is divided into six sections, and moves to the right or left in sections by wheeling up either fully or at angle ; when the full wheel is made the subalterns are on the wheeling flank of the section nearest to them. The only time points for dressing are employed is when there is a formation or detached points either to the front or to a flank ; the Sergeant-Major then marks the right, and the outer flank men rear rank where the left of their half companies will rest. Sometimes the company wheels, but most of the movements are done by half companies in file.

The company is formed into two deep, by the third rank moving up on the right, or if the company is in column of half companies, by forming in rear ; each of these divisions is then called a *Zug*, and this is the company column. The subalterns are in rear of the centre of each *Zug* with the Sergeant-Major on the right of the leading one. The place of the Captain is in front of the centre.

This column wheels to the right or left, the rear making a half turn, the pivot flank being under the direction of the Sergeant-Major who gains ground during the wheel ; it also moves to a flank by sections, and deploys (but without points) to either flank or outwards. It moves to the right, left or front from either flank in fours in the same way as our cavalry ; only the rear rank wheels up with and follows the front rank. Deployments are made in file.

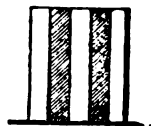
All the ranks are said to be composed of the same class of men sized from flanks to centre, but from personal observation I am of opinion that the best men are put into the front rank, and that that rank (if not all the men) of the leading company are selected men from the battalion.

In the Extended Drill, the leading *Zug* generally extends four paces in file, the second re-inforces, by extending the same number of paces, and the files place themselves in between the files of the leading *Zug* ; at drill the third *Zug* is seldom extended, but is generally brought up behind the extended line in close order, and fires volleys standing, over the heads of the front line, kneeling down immediately afterwards. Sometimes the two leading *Zugs* are extended two paces, one on the flank of the other.



No. 3.—The firing ranges are made in a wood, the trees are cut down, and galleries are thus formed converging towards a hill. None of the ranges are more than 600 yards.

The men fire in Marching Order in any position; there are only two kinds of targets—one is iron, about five feet broad and six feet high, with two black stripes about a foot broad, and the other is made to represent the figure of a man. The markers are dressed in red, and run out after each shot to signal, which they do with a small hand disc. By the side of the markers' butt there is an arm with a large disc at the end of it, and which, I fancy, must be attached to the seat; when the markers are in the butt it is up, but when they are out, it falls down in front of the target.



The number of rounds each man fires appears to be determined on the spot by the superintending officer, and is decided by the manner in which the soldier shoots; if he does not hit the target often enough, when firing up the range the first time, he tries a second time, and so on.

What we call Field-Firing is constantly practised combined with manœuvring, together with throwing up entrenchments, field works, &c., and making bridges, &c., &c. There is a piece of ground near the ranges expressly devoted to this purpose. The manœuvres which were to be performed by the XI Army Corps were ordered to take place between Homburg and Frankfür.

These manœuvres are always conducted in the same way; they last for six days; the first day is on a Friday, when the troops are inspected and march past; on Saturday the Army Corps manœuvres against a marked enemy; and on Monday, Tuesday and Wednesday they are divided into two Divisions, and operate one against another.

The XI Army Corps (to which on this occasion I fancy some other troops were added) consisted of 43 battalions of infantry, six regiments of cavalry (of five squadrons each), and three regiments of artillery (25 batteries), together with a pontoon and telegraph train.

General of Cavalry, V. Schlotheim (who was Chief of the Staff to the Army of the Meuse in 1870) commands this Army Corps, and Colonel V. Scherff is his Chief of the Staff.

The numbers were about as follows:—

Each infantry battalion	500 men	× 43 =	...	...	21,500
" squadron of cavalry	90 "	× 30 =	...	...	2,700
					<hr/> 24,200

Each battery had four guns, except one which had five, therefore there were 101 guns with six horses, on which were three drivers ... 303

Each field-battery gun had six gunners; and each horse-battery had nine gunners.

21 field batteries,	24 gunners	...	...	504
3 horse "	36 "	...	...	108
1 " "	45 "	including No. 1s....		45

960

Carried over ...

24,200

	Brought forward ...	980	21,200
Other non-commissioned officers, say ...	50		
			1,010
The bands consisted of ..	...		1,012
43 battalions with 16 drummers each and a Drum-Major ...	...		781
Officers of infantry about ...	...		1,000
" of cavalry "	...		130
" of artillery "	...		80
" of staff "	...		60
			<hr/>
			23,213

Therefore something under 30,000 of all ranks including the Train and Medical Services.

On the 21st September the troops assembled for the inspection parade on some high table-land fairly level between the villages of Ohererlenbach, Niedereschbach and Niedererlenbach. The ground, which consisted mostly of stubble field, had been rolled and otherwise prepared.

The troops were billeted in the neighbouring villages, and marched to the parade ground by the roads marked on the map in red. The State allows 80*pf.* a day (about 10*d.* of our money) for each soldier, but for those quartered in the town of Homburg the Municipality made the allowance up to three *marks* (3*s.* a day) to the hotel-keepers or people who took them in.

For this allowance the soldier has to be supplied with everything, including tobacco.

The hour appointed for the troops to be formed up was 10 o'clock. At twenty minutes past 9 o'clock the columns appeared, marching on to the ground; at five minutes to 10 o'clock they were all formed up as follows:—Infantry in the first line in Battalion Quarter Columns. On the right was the 21st Division under the command of Lieutenant-General von Böhn, consisting of—

41st Brigade, commanded by Major-General v. Ranch	87th Regiment, 4 battalions.
	88th " 3 "
42nd Brigade, commanded by Major-General v. Amelungen	80th " 3 "
	81st " 4 "

In the centre was the 22nd Division under the command of Lieutenant-General v. Unger, consisting of—

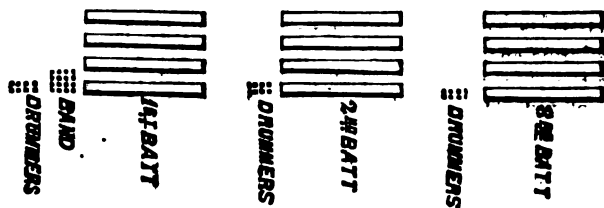
43rd brigade, commanded by Major-General Fischer	97th Regiment, 3 battalions.
	83rd " 3 "
	95th " 3 "
44th Brigade, commanded by Major-General v. Carnap.	32nd " 3 "
	94th " 3 "

On the left was the 25th Division under the command of Lieutenant-General Prince Henry of Hesse, consisting of—

49th Brigade, commanded by Colonel v. Grote	115th Regiment, 3 battalions.
	116th " 3 "
50th Brigade, commanded by Major-General v. Wussow	117th " 3 "
	118th " 4 "

The under officers' School of Foot Artillery, and a Pioneer Battalion.

The drummers (sixteen per battalion) were formed in two ranks on the right of their respective battalions, except those of the right battalions of regiments, which had the band on the right, and the drummers of this battalion on the right of the band. Thus—



The Regimental Bands consisted of about forty performers each, the Commanders of Divisions, Brigades, Regiments, and Battalions were on the right of their respective commands and in the general line, intervals being left for them. The officers were in front of their own companies.

The only mounted Regimental Officers were the Colonel and his Adjutant, and the Battalion Commandants (Majors) and their Adjutants.

The men were dressed in Review Order, with knapsacks and canteens. They were all in new tunics, new helmets and white trousers, which clothing was given back into store immediately after parade.

The ground was marked out by posts about three feet high; there was a post with a number on a board to mark the right of each regiment; there was no Divisional or Brigade covering, but the regiments were dressed from post to post on Battalion Markers.

Each Battalion has one Color, which is placed in rear of the flank of the centre company.

The second line, which was about two hundred yards in rear of the first line, consisted of—

The cavalry in line of Quarter Columns of Squadrons, with the bands on the right of each regiment (mounted on white horses); the artillery in Line of Batteries at close intervals, with their bands mounted on the right of each regiment; and on the extreme left the Pontoon and Telegraph Train.

The Cavalry Division was under the command of Major-General y. Gemmiger, and consisted of—

22nd Brigade, commanded by Major-General v. Bünting	<table> <tr> <td>14th Hussars.</td><td rowspan="3">} each of five squad- rons.</td></tr> <tr> <td>6th Ulan.</td></tr> <tr> <td>13th Hussars.</td></tr> </table>	14th Hussars.	} each of five squad- rons.	6th Ulan.	13th Hussars.
14th Hussars.	} each of five squad- rons.				
6th Ulan.					
13th Hussars.					
25th Brigade, commanded by Lieut.-Colonel v. Kluber.	<table> <tr> <td>5th Dragoons.</td><td rowspan="3">} each of five squadrons.</td></tr> <tr> <td>23rd "</td></tr> <tr> <td>24th "</td></tr> </table>	5th Dragoons.	} each of five squadrons.	23rd "	24th "
5th Dragoons.	} each of five squadrons.				
23rd "					
24th "					

The Artillery appeared to be as follows :—

11th Artillery Regiment 8 Foot Batteries.

23rd " " 3 Horse " and 5 Foot Batteries.

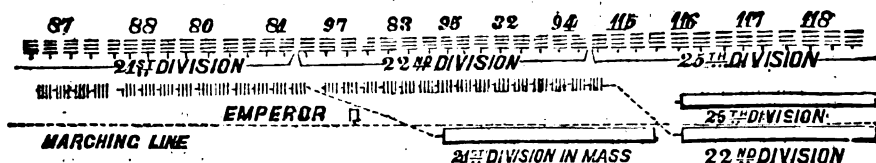
27th " " 1 " battery of 5 guns and 8 Foot Batteries.

The gunners (20) for Foot Batteries and 32 for Horse Batteries (not

including the No. 18. who were all mounted, and in a line with the leading gun horses) were drawn up two deep in rear of the guns.

At 10 o'clock the Emperor arrived on the right of the first line. There was a general salute, all the bands playing, the time being kept by the Drum Majors, who took a pace to their front, turned to their left and moved their staffs up and down over their heads. The salute over, all sloped arms and the inspection commenced.

As the Emperor approached, each regiment "presented arms," and the band played, Drum Majors keeping time as before. The Emperor proceeded first down the line, accompanied only by General of Cavalry v. Schlotheim, and was followed by all the Foreign Officers and a numerous Staff. They passed along the front of the first line from right to left, and along the front of the second line from left to right. As soon as the procession had passed, the infantry filed into mass to the right by Divisions and retired. Thus :



So that by the time the inspection of the cavalry was over the front was clear, and the infantry was ready to march past. The Emperor placed himself about 100 yards ahead of the 21st Division on the marching line.

The 22nd Division formed mass in rear of the 21st, and the 25th Division on the right flank of the 22nd.

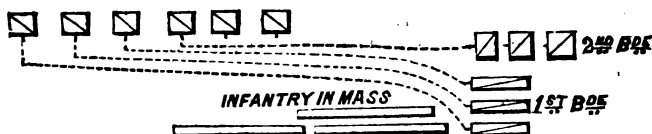
There was a small trench cut along the marching line, by which means the right flanks of the mass covered.

The Infantry marched past in Column of Companies. The company officers were in rear and did not salute. The drummers of the leading Division (I think) were formed up opposite the Emperor, and remained in this position during the time the Infantry were passing. The bands were in advance and clear of the left flank of their respective regiments; they wheeled to the right opposite to the Emperor, and formed up on the right of the drummers. A mounted officer (the Regimental Adjutant I suppose) after he had marched past, returned by the rear to the right flank of the band, and superintended their playing and movement; by this means regularity was preserved.

As the marching past proceeded the 21st and 22nd Divisions closed up, and the 25th Division moved to the left on to the marching line.

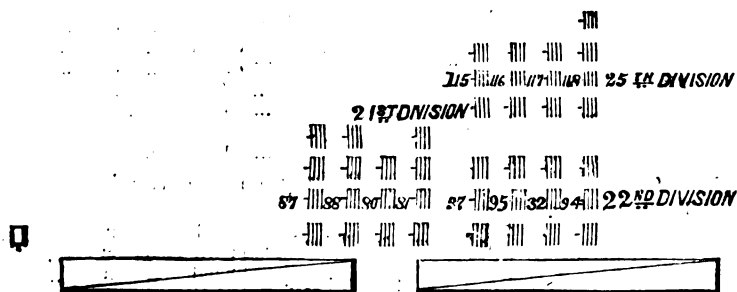
The Cavalry.—As soon as the Emperor had finished his inspection, the regiments of the 1st Brigade advanced alternately from the right, moved to the left in fours, and formed Line of Quarter Columns of Troops in rear of the infantry. By this arrangement the right regiment (whose right flank was on the marching line), was on the left, and the left regiment was on the right. The 2nd Brigade advanced, moved to the left in

fours, and formed mass on the right of the 1st Brigade; as this brigade advanced the 2nd Brigade moved to the left on to the marching line.



The Artillery also advanced somewhat, and closed on their centre, but remained in line. These movements finished, the Cavalry and Artillery dismounted.

The infantry after marching past wheeled to the right twice behind the Emperor and formed up in Regimental Columns; the 21st and 22nd Divisions in mass with their left flanks on the marching line, and the 25th Division in mass on the flank of the 22nd Division.



Cavalry marching past in column of troops.

When the Infantry had all past, the Cavalry marched past in Column of Troops at a walk, the bands moving on the outer flank in advance of the leading troop, and wheeling opposite to the Emperor. After passing the Emperor some two hundred yards, the troops wheeled to the right and formed Squadron Quarter Columns in Line of Brigade Masses in rear of the Infantry.

The Artillery, when their front was clear, advanced and wheeled into Column of Batteries to the right on the marching line; they marched past at close intervals with the gunners of both Foot and Horse Batteries in two ranks in rear of the guns. There were no waggons.

The Artillery after passing wheeled to the right and formed up on the right flank of the Cavalry.

After the Mounted Troops had all passed, the Infantry moved to their left in file on to the marching line, and marched past again, in Regimental Quarter Columns.

The Regimental Mounted Officers, except the Colonels, marched past in two ranks in front of their brigades with the Staff. The three Colors were in front of the centre of their regiments and the Colonels immediately in front of them. The bands were brigaded and marched as before under the superintendence, I suppose, of the Brigade Staff Officer.

After the Infantry had passed the second time, the Cavalry "trotted past" in Column of Squadrons. The Cavalry bands were in front of the centre of the regiments and inclined to the left, fronted and wheeled to the right opposite to the Emperor, without any difficulty.

The Artillery trotted past in Divisions or Half Regiments.

- 1st—4 batteries of Foot with the gunners on the guns and limbers.
- 2nd—do. do. do. do.
- 3rd—3 batteries of Horse with gunners in rear of their guns.
- 4th—4 do. of Foot do. on the guns and limbers.
- 5th—1 do. of Foot and 1 battery of Horse (mixed.)
- 6th—4 do. of Foot.
- 7th—4 do. do.

The troops after marching past the last time, moved off the field to their respective billets.

All had passed by 1 o'clock exactly.

September 22nd, Saturday.—The Army Corps was this day placed in position as follows:—

21st Division ...	{	Infantry, 41st Brigade ...	{ 87th Regt., 3 battalions.
		" 42nd Brigade ...	{ 88th " 3 "
		" 42nd Brigade ...	{ 80th " 3 "
		" 42nd Brigade ...	{ 97th " 3 "
	{	Cavalry, 5th Dragoons ...	4 squadrons.
		Artillery, 1 Division ...	4 batteries.
		1 Pioneer Company.	
		Pontoon Train ...	1 section.

East of Ober Ursel, north of the Railway on the Homburg road at the railway crossing.

22nd Division ...	{	Infantry, 43rd Brigade ...	{ 83rd Regt. 3 battalions.
		" 44th Brigade ...	{ 95th " 2 "
		" 44th Brigade ...	{ 32nd " 3 "
		" 44th Brigade ...	{ 94th " 3 "
	{	Cavalry, 14th Hussars ...	1 squadron.
		" 6th Ulan ...	1 "
		Artillery, 1 Division ...	4 batteries.
		1 Pioneer Company.	

Between Bommersheim and Kahlbach on the road between Weiskirchen and Obersiebach.

25th Division	{	Infantry, 49th Brigade ...	{ 115th Regt., 3 battalions.
		" 50th Brigade ...	{ 116th " 3 "
		" 50th Brigade ...	{ 117th " 3 "
		" 50th Brigade ...	{ 118th " 2 "
	{	Cavalry, 23rd Dragoons ...	1 squadron.
		" 24th " ...	1 "
		Artillery, 1 division ...	4 batteries.
		1 Pioneer Company	

Between Kahlbach and Bonames—The Corps Artillery, 3 batteries, were south of Kahlbach, and the Cavalry Division consisting of—

1st Brigade ...	{	14th Hussars, 4 squadrons
	{	6th " 4 "
	{	13th " 5 "
2nd Brigade	{	23rd Dragoons 4 "
	{	24th " 4 "

with one Horse Artillery Battery were north-west of Kahlbach.

This Corps so placed was to attack an enemy that was marching on Frankfort by Seulberg and Havheim, and force it back to the eastward.

The enemy, which was commanded by Major-General v. Radecke, was supposed to be a Corps consisting of two Divisions (24 battalions of infantry, 24 squadrons and 16 batteries.)

It was represented as follows—

1st Division	...	{	Infantry, 1st brigade by	1 battalion, 87th Regt.
			2nd " "	1 " 95th "
			3rd " "	2 " 118th "
		{	Cavalry, 4 squadrons by	1 troop, 14th Hussars.
2nd Division	...	{	Artillery, 4 batteries by	7 guns.
			Infantry, 4th Brigade "	1 battalion, 81st Regt.
		{	5th " "	2 " "
			6th " "	1 " "
		{	Cavalry, 4 squadrons, by	1 troop, 18th Hussars.

Artillery, 4 batteries, by 8 guns.

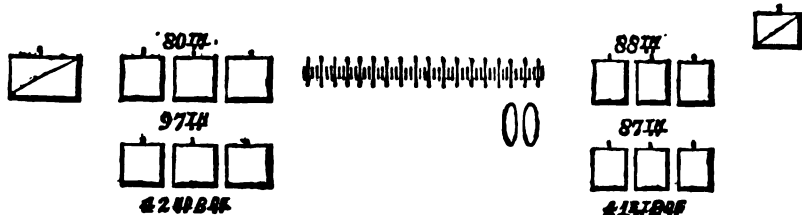
Cavalry Division, 2 brigades, by 2 troop of Dragoons.

Corps Artillery, 4 batteries, by 9 guns

These troops had green twigs in their helmets, and there was a large red flag carried in the centre of each company. The Artillery were marked with a white canvas target on a frame, with a round black centre (like our musketry drill target) fastened on the limber.

When the operations commenced the villages of Gouzenheim, Obereschbach and Niedereschbach were occupied by the enemy, and their Cavalry Division was in the plain to the west of these villages on their right flank.

The 21st Division was drawn up with the 41st Brigade on the right and the 42nd Brigade on the left, in Regimental Columns, with the Artillery in the centre. One troop on the right flank and the rest



of the Cavalry on the left, and the Pontoons in rear of the right of the Artillery. The men were dressed in marching order with havresacks (empty), water-bottles, and about every third man had a spade with a short handle; the coats were rolled and carried on the left shoulder and under the right arm. Every man in the Pioneer Company carried tools.

The Captains (who were all mounted to-day) assembled their companies around them and explained the operations about to be undertaken.

The 22nd Division was drawn up in a somewhat similar formation, but the Brigades were not separated by the Divisional Artillery; also there were two companies in advance of each brigade, some 300 yards

in Company Columns at deploying interval, and the Divisional Cavalry were on the left flank of these companies in Column of Fours.

The 25th Division was ordered to have the right flank covered by the 117th Regiment and one squadron which were to be placed south-west of Bonames, but I did not see this Division.

The orders of General v. Schlotheim were evidently for the Right Division to throw itself across the enemy's line of march, whilst the Centre and Left Divisions attacked the rear and right flank.

The troops were in position at 9 o'clock, but the Emperor did not arrive till 10 o'clock, at which hour a gun was fired as a signal for the operations to commence.

The Cavalry came to the front, deployed with the right flank écheloned to the rear (as far as I could see) and charged across the plain. Whilst these charges were being made, I observed that the Divisional Cavalry, without orders, went to the front in support, but they did not follow far.

The companies in front of the 22nd Division advanced, two on Gouzenheim and the other two on Obereschbach. They extended their leading *Zugs*, although there was no enemy in sight and the villages were upwards of two miles off. They were extended in file at about four paces, and the two *Zugs* followed in column about 200 yards in rear; there was, very soon after the advance, an interval between the two companies of the Left Brigade and the two companies of the Right Brigade, of at least 500 yards. There were infantry scouts attached to the left flank and about four Hussars. One of the latter reported the advance of the 21st Division along the Homburg road to the Captain of the left company (which I accompanied) moving on Gouzenheim. This company, belonging to the 32nd Regiment, advanced across the country (undulating ground with stubbles and turnips, small ditches, but no hedges), certainly at the rate of upwards of four miles an hour.

The Division in columns followed, and the Divisional Artillery came into action on some high ground against the enemy's artillery above Gouzenheim, which was more than two miles off measuring on the map. They put up a diamond-shape board, one side of which is painted red and the other white, to denote whether they are firing at the enemy's infantry or artillery. On reaching the high ground above Obereschbach, I observed that this village was occupied by the enemy, so I stopped to see it attacked. The advance guard, *viz.*, the two companies of the 32nd Regiment that I was with, moved down the valley to the left, with the two squadrons of Divisional Cavalry to connect, I suppose, with the 21st Division, whose leading troops had now passed Gouzenheim and were marching on Seulberg. A battalion of the 32nd Regiment, which was coming up, formed to attack the village of Obereschbach. In front of the extended line were two officers (subalterns); as soon as they observed that the enemy occupied the village, they ran back, whistled and held up their swords, whereupon the extended line moved forward to a convenient position, and opened independent fire; the distance from the enemy was about 400 yards; the men fired by order two rounds; they all adjusted their sights and took aim. In two minutes from the time of coming into action, the line was re-inforced by the next *Zugs*; they

advanced, extended about four paces on the march, and re-inforced the line throughout. On coming up they fired two rounds independently; in another two minutes the rear *Zugs* did the same thing. The firing line was now almost at close files, two deep. Another battalion came up on the right and one on the left in the same formation. After firing another round or two, the officers of the company that had first come into action, all whistled, whereupon their men ceased fire, and placing themselves in front led their company forward at the double about 50 yards, and again ordered independent firing to commence (no doubt naming the number of rounds). The companies on the right and left fixed bayonets before they advanced into the same line. When the firing line had advanced, as above, to about 250 yards from the village they charged, cheering. The rear companies of these battalions deployed into line two deep, and advanced in quick time with bayonets fixed, arms sloped, and drums beating.

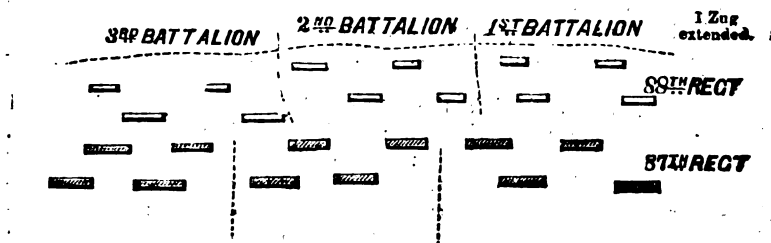
These were followed by the regiments forming the second line, some of which had their companies deployed two deep, and others in columns, according to the nature of the ground; they were in two lines with intervals between the companies; they also advanced in quick time with bayonets fixed, arms sloped, and drums beating.

The artillery were in rear on the high ground, firing over the heads of the infantry. As the infantry advanced they followed taking up new positions.

The Cavalry Division was with the 25th Division. I heard this Division in action about Niedereschbach, but could not see them.

Gouzenheim and Obereschbach were taken, and the enemy retired to Obereschbach and to some high ground behind that village. The 21st Division, with its right at Gouzenheim and its left towards Seulberg, advanced against this height. The country was open; all the companies, therefore, were deployed in two deep lines.

The 41st Brigade was on the right, with the 88th Regiment leading and the 87th in rear.



The rear line advanced in quick time, occasionally lying down. The captains rode in front of their companies, except those belonging to the front line who were on foot, their horses being led in rear by an orderly. The distances between the lines was about 200 yards. The cavalry of the 22nd Division advanced in force from the right of squadrons in rear of this Brigade.

The Divisional Artillery fired from high ground in rear over the

heads of the infantry. I presume the 42nd Brigade, which was on the left, advanced in the same formation.

There is a wood to the north of Obererlenbach which was carried; the enemy made a counter attack here and endeavoured to regain it; the two forces came in contact just outside the wood; both sides fixed bayonets and charged home; the men crossed bayonets, and then laughed at each other.

It was now about 1-15 o'clock and the "cease fire" sounded throughout the line.

The enemy was certainly driven off the Frankfurt roads towards Gross Karhen, which was the object of the manœuvre.

Notes.

The firing was generally bursts of "independent." I did not hear more than a dozen volleys throughout the day; there was no attempt at long range fire with the infantry; they did not commence until they were within 500 yards of the enemy. I did not see any range-finders used. The discipline seems to me to be very good, both the officers and non-commissioned officers are strict and very stern.

The men were never unnecessarily kept at "attention," but when they were called to "attention," they were very steady, more especially when advancing to the attack; each company then kept step to their own drums. The drums beating the quick step at this time had, to my mind, many advantages; they kept the columns or company lines steady; the roll was most inspiring, and it gave notice to the charging line that support was close behind.

I did not see any man fall out, although the distances marched in some cases must have been upwards of ten miles from their billets. They never took off their knapsacks and did not seem to feel their weight; they had only two pouches, both in front.

There were very few ambulances, and the only occupant of those there were, was an unfortunate Ulan, who had a fall and broke his ribs.

The men did not appear to be thirsty; they did not stop to drink at the streams or villages, and there were no water-carts; they were content with what they carried in their bottles. During all the time I was in Homburg (nearly a month), I never saw a drunken soldier.

There were no ammunition-carts, and, therefore, no serving out ammunition in the field.

Physically, I do not think the men are better than ours,—in fact I should say they are much the same; their marching powers, however, seem to me to be extraordinary; they certainly advanced from their positions towards the enemy at the rate of over four miles an hour, sometimes over ploughed fields and occasionally through turnips; the 21st Division must have gone upwards of four miles to the attack, and after the field-day they started off for their billets quite cheerily. Each company, it appears, is trained to sing inspiring martial songs, which they render uncommonly well. The words of the one I heard seemed to be something like this:—

"The march is not very long, but if it was, what matter?"

"We shall soon get there, who would not be a soldier?"

September 24th.—The troops to-day were divided into two forces opposed to each other.

The 25th Division and the 41st Brigade, with a Brigade of Dragoons were at the railway station at Gross Karben, and the rest of the Corps, namely, the 22nd Division and the 42nd Brigade, were at Heldenbergen.

The eastern force had to march on Frankfurt, and the western force had to prevent their doing so.

The commander of the Eastern Division endeavoured to move round the right flank of the Western Division, passing through some woods to the east of Budesheim, but he was checked at the entrance of the woods, driven back by the 41st and 49th Brigades, and the action came to a standstill. I was with the 50th Brigade which, together with the Cavalry Brigade and Divisional Artillery, were posted on some rising ground to the east of Rendel, just clear of the Karben wood.

The Artillery were massed on this height, and fired from thence at a range of about two miles. The Horse Artillery Battery attached to the Cavalry Brigade deployed on the right of the Divisional Artillery, and came into action with them. The cavalry were formed up on the left flank of these batteries below the brow of the hill in Quarter Column of Squadrons with their left flank towards the enemy. Once they were ordered to mount, form fours to the left, and advance to charge what appeared to be the enemy's cavalry, but it was discovered to be a party of Dragoons with led horses, so they were ordered back; they returned to their position, and remained there for the rest of the day. The Artillery did not move either; they were well posted, and as neither side made any progress, there was no occasion for them to move. An advance of a small body of the enemy's troops was made evidently as a feint from Heldenbergen, and the 50th Brigade advanced to repel it; they were drawn up with the 118th Regiment in front, and the 117th Regiment in rear, each in two lines of Company Columns. When they advanced the leading *Zugs* extended four paces, and when they got over the ridge, the companies in close order deployed into two deep lines. Having repulsed this feeble attack, which was not persevered in, the brigade retired behind the ridge, and eventually moved in the same formation to N. Dorfelden, where the whole western force bivouacked. Cavalry vedettes were at once posted, patrols sent out towards the eastern force, and the neighbouring villages occupied by companies of infantry.

Notes.

I did not see much to remark upon to-day. The sentries, who were posted from the company on outpost duty at Rendel, took off their knapsacks and placed them on the ground by their side.

The Cavalry are certainly not as smart in appearance as ours; nor, on the whole, do I think they are as well mounted; they carry their swords on their person, and their carbines in buckets just as our men do. I did not see any cavalry dismount to use their carbines.

The Artillery are not to be compared in appearance to ours, but they look serviceable; their horses, generally speaking, are better than those of the Cavalry.

The Infantry Regimental Officers are all mounted on good horses, and ride particularly well; they must, I think, have passed through the riding school.

September 25th.—The Eastern Force having bivouacked about Windecken was to advance on Frankfür, and the Western Force, which bivouacked about N. Dorfelden, was to oppose their advance.

The Emperor arrived at 10 o'clock and the gun was fired shortly afterwards.

The commander of the Western Force sent the 41st Brigade towards Budesheim, and the other two Brigades, namely the 49th and 50th, through the wood south of Dorfelden, on to some commanding ground between the wood and Kilianstaden.

The Eastern Force took ground to their right and drove back the 41st Brigade; whilst a regiment, I think, and the Divisional Artillery were sent to engage and keep in check the 49th and 50th Brigades. I presume the endeavour of the Commander of the Western Force was to draw his opponent on by displaying his force on the high ground and then fall on his flank with the 41st Brigade, whilst the object of the Commander of the Eastern Force, who had evidently discovered the position of his adversary's troops, was to defeat the 41st Brigade, drive it off towards N. Dorfelden, and then with his entire force to fall on the 49th and 50th Brigades; neither commander was able to carry out his design. The Commander of the Western Force, seeing that his enemy's columns were all moving towards his 41st Brigade, retired with his entire force and took up a position facing north-east, with his centre on the wood. The 41st Brigade was on the left, the 49th in the centre, and the 50th on the right; the flanks were both thrown back. The Eastern Force deployed and advanced against the angle. The centre, namely the 49th Brigade, seemed to me to be rather over-extended, even for their central position; the left flank, namely the 41st Brigade, was in the usual formation of one regiment in front and one in rear, with companies all deployed (two deep). I did not see the right flank. The companies in rear of the left flank were well covered by the ground, as was also the Divisional Cavalry, which was in rear of that flank.

The Artillery, as on former occasions, opened fire at least two miles off, and they did not seem to be as much massed as heretofore. Two batteries, with the Divisional Cavalry, were well placed on the left flank, and I imagine would have done great execution to the right of the Eastern Force as they advanced. The cavalry made a charge on the flank of the extended line, the men remained in the extended formation; what would really have been the result it is difficult to say; but I think the Skirmishers would have broken. They had, however, a support which fired a volley or two at the cavalry, but not before they had reached the extended line. After this there was a counter-attack, and a bayonet charge made by a battalion of the 41st Brigade on the left; the men were brought to the brow of the hill in two deep formation and charged in line, two companies in front and two companies in support. All this tended to check the advance of the right flank of the Eastern Force, but they were apparently making more progress on the other flank. The "cease fire" now sounded, and the action was suspended at about 12-30 o'clock.

It was, I believe, to have recommenced after about an hour's rest, but the rain came down so hard that the troops were ordered to march to

their bivouacs, the Eastern Force to Wachenbuchen and Mittelbruchen, and the Western Force to Bergen.

Notes.

The infantry fire was nearly always "independent." The only volleys I saw fired were at cavalry from the supports, and by the supports again when they were brought up unextended and fired standing up, over the heads of the extended line. The companies, acting on the defensive in the centre, had two *Zugs* extended at about two paces and one *Zug* in support; this *Zug* was occasionally brought up to the extended line, fired two or three volleys and then retired. I observed that all the flank companies had scouts (about three, I suppose, a non-commissioned officer and two men) detached to their exposed flank.

The troops had at their bivouacs, last night, large supplies of straw, and they seemed to have had an abundance of wood, for there was a considerable amount of it left unburnt this morning. They must have had a bad night; it was very wet and cold. They did not naturally present a very smart appearance this morning; however, they seemed to work as well and cheerfully as usual.

The supplies are all drawn from the neighbouring farmers and villages. I did not see a single Commissariat cart. At one or two villages there were powder magazines, evidently made for the occasion, a hole cut in a bank and a bricked vault made with an iron door and two padlocks.

The telegraph was put up to-day; it extended for about three or four miles; it was placed on poles, except in the villages where it was fixed by staples on to the houses.

September 26th.—This day the Western Division took up a position on the heights above Bergen and partly entrenched themselves; the Eastern Division, advancing on Frankfür from its bivouacs between Kilianstaden and Mittelbruchen, attacked it. The position was a good one; the right rested on a very steep height which falls suddenly from Bergen down to the River Main, and the left on a wood; the front which looked eastward sloped gradually towards the Dorfelden wood; before reaching this wood, however, the ground rises again, and is undulating, the village of Wachenbuchen standing on a height.

About 9-30 o'clock the Emperor arrived and operations commenced.

The Cavalry Brigade belonging to the Western Force was sent to the front to reconnoitre. Two regiments advanced in Line of Squadron Columns (namely four half troops), at deploying intervals, and one regiment was in rear of the centre in the same formation; the battery of Horse Artillery, which accompanied the brigade, advanced in line on the right flank of the two leading regiments, slightly *écheloned* to the rear. Before they got to the wood, however, the cavalry of the Eastern Force appeared coming over the height about Wachenbuchen, and close behind them several batteries of artillery, which deployed and opened fire on the Western Cavalry. It was now that the artillery in position at Bergen opened fire, and at a range of at least three miles measuring on the map.

The Cavalry Brigade of the Western Force refused to engage under the circumstances (very properly I thought, as there was nothing to be gained in so doing) and retired in the same formation to their right

flank, taking up a position under admirable cover, whilst their opponents moved into the wood.

The Eastern Artillery then advanced to a nearer position, and their Infantry appeared coming over the ridge behind the artillery, in columns; they moved into the valley below and were hid from sight. It was now doubtful whether the attack would come from the valley of the River Main or through the Dorfelden wood. The first infantry fire that was heard was from the Main valley, namely, volleys at the cavalry patrols that had been sent to reconnoitre in that direction.

After some 15 or 20 minutes, however, it became evident that the main attack was to be expected from the wood.

I now attached myself to the Eastern Force, and found that nearly two brigades were employed in this attack with a battalion only on their left in the valley of the Main; the other brigade was *écheloned* considerably to the right. The attacking brigades, namely the 44th and 42nd, advanced in line in their usual formation, *viz.*, companies deployed in two ranks with company intervals, each battalion, with two companies in front and two in rear about 200 yards, regiments in line, and one regiment of the brigade in rear of the other. An officer was 100 yards in front of each leading company, with his whistle in hand and sword drawn, on coming within small arm range the leading companies, which were on the exposed ground, extended one *Zug*, but those that were covered by the ground remained in close formation. The battalion that I was with advanced up a valley and was quite protected until within about 400 yards of their enemy. On reaching this point the leading companies extended about two paces and opened independent fire. After one or two rushes, bayonets were fixed and all preparations made for a charge, but it was stopped by the umpires. During this attack the defenders attempted a counter-attack on the right flank of the 42nd Brigade; they must have employed at least a brigade for this purpose, but they found the 43rd Brigade on their outer flank and had to change front to their left to meet them. This movement exposed their right flank to the batteries in rear of the 42nd Brigade, and I think they would have had to retire, but the "cease fire" sounded and all further action was stopped.

Notes.

This was the first time I had seen an advance of cavalry in Line of Squadron Columns. By this means they may sometimes more easily get cover with large squadrons, but to-day they had only 10 and 12 in front, and did not show much less depth than a Column of Fours would have done. I should think the forming to the front was about as rapid in one case as the other, but perhaps the column formation is more simple and all the men are facing their enemy.

The Artillery fired at even longer ranges to-day than on other days. I believe their guns are sighted for about 4,000 yards, but those on the Bergen height must have been beyond that when they commenced. I was much impressed by the steady and rapid advance of the Infantry in four lines; the intervals between the companies allowed their captains to move them to the right or left to take cover; they came on in quick time without halting, for

I should think, 2,000 yards. Although the fire was very rapid when it did begin, I do not think more than ten rounds per man were fired before they prepared to charge. Cavalry scouts, about three per battalion, are attached to the Infantry; they were used to-day in front of the line advancing to the attack. All the officers dismounted on coming within infantry fire. The large amount of brass on the helmets reflected the sun and made the men in the shelter trenches very distinguishable, which they would not otherwise have been. Every sergeant I observed had a map which he appeared to understand. The Commanding Officers of battalions were with their rear companies, the Colonels of regiments in rear of the centre of their regiments, and the Commanders of brigades in rear of their brigades. There was no galloping about with orders, and all worked as smoothly as possible. When once a company was committed to the fight, it was left to its own officers to do their best. When the operations were over I heard a Colonel lecturing a Major for something he had done wrong, but during the fight he had not been interfered with.

NARRATIVE OF THE BRITISH WARS WITH CHINA FROM 1840 TO 1860.

*Selections from a Military Report on North-East, Central and South
China, submitted to the Quarter-Master General in India.*

BY

MAJOR MARK BELL, V.C., R.E., A.Q.M.G.

CHINA WAR, 1840 TO 1842.

From 1820* an extensive trade in opium had been carried on between India and Canton, the vessels containing the drug anchoring at Whampoa. In 1830, 15 to 20 opium vessels which lay off Lintin below Whampoa, were expelled from Whampoa by Imperial edict and the sale of the drug prohibited. With the exception occasionally of a fierce edict, no other steps were taken to prevent the traffic, as it was a source of great profit to every one of the Canton officials and was connived at by them.

Between the years 1830 and 1835 numerous onerous restrictions were placed upon foreign trade generally by the Chinese officials. Lord Napier, sent out from England to be Superintendent of British Trade, was treated by them with the utmost indignity; insulting proclamations being issued, in which he was termed "a lawless foreign slave," "a barbarian eye," and a "foreign devil." His death was primarily occasioned by the mental vexation caused by being compelled to submit to the daily insults of the Chinese authorities in his attempts to carry out the orders of his Government. Their contemptuous treatment of him was considered by them to be a *victory* over the barbarian country that he represented.

In 1837, from the frequent piracies in and about Canton, it was necessary to have one or more of Her Majesty's ships-of-war convenient to that city and in communication with the Superintendent. "Opium" was also made by the authorities the excuse for justifying many questionable acts with reference to foreigners, with a view to their humiliation and expulsion from the country. On the 2nd December 1837, the British flag was struck at Canton, and the Principal Superintendent of Trade, Captain Elliot, withdrew to Macao.

* Martin's "China."

In 1838, Her Majesty's Ship *Wellesley* arrived off Canton, and the Chinese were informed that, as trade was open, British war ships would frequently visit China with peaceful intentions.

There is believed to have been in Peking at this time a reform party favourable to foreign intercourse, struggling to show its head and guided by the Empress, a woman of great personal attractions and extraordinary and great force of character.

Memorials favourable to both views—*i.e.*, to the opening of China to trade and to its total exclusion—were presented to the throne; the one based on its importance to China, the impossibility of prohibiting it, and of the virtue of bowing to necessity; the other founded on patriotism, national pride, and adherence to the maxims of former Emperors, as well as on the ill effects caused by the use of opium on the health of the people and the drain of silver from the country in order to pay for it. The death of the Emperor's son from the effects of an over-dose of opium decided the Emperor Taoukwang to favour the party advocating the exclusion of the foreigner and all trade. At the time that these difficulties overtook the Empire, he was upwards of 60 years of age, having been born in 1782.

Frequent cessations of trade now took place on account of the arrogant and tyrannical conduct of the Chinese authorities at Canton.

In February 1839, a Chinese, accused of dealing in opium, was strangled in front of the foreign factories. Captain Elliot, Chief Superintendent of Trade, remonstrated against this insult to the Governor of Canton.

On the 10th March, Commissioner Lin reached Canton with Imperial authority to crush the opium traffic. He was a man of an extreme character, whose aim was to "*curb, control, and humble*" the foreign community generally. He never adopted the character of a "negotiator," but invariably assumed that of a "dictator."

18th March.—Two edicts were issued, requiring all the opium on the store ships to be surrendered, and bonds to be given by the owners that they should never bring any more, on penalty of death. Three days were given for a reply.

21st March.—All foreigners were forbidden to go to Macao, communication with Whampoa was cut off, and the foreign factories surrounded by soldiers.

24th March.—Captain Elliot demanded passports. Provisions were stopped, and a triple cordon of boats placed in front of the factories. At this time, Her Majesty's Sloop *Larne* having been despatched to Calcutta, there was not a single British ship-of-war in Chinese waters, and the Superintendent was both helpless to protect others, and himself a prisoner under his country's flag, whilst opposed to an overbearing Commissioner armed with unlimited powers.

26th March.—Captain Elliot received commands from the Chief Commissioner Lin to deliver over all opium in the possession of British subjects; this he consented to do, *viz.*, 20,283 chests.

On the *5th of May* the cordon of observation was withdrawn, and trade nominally resumed, whilst the Chinese took measures to fortify the river and place booms across it.

May 23rd.—Up to this period Europeans were detained in their factories at Canton.

May 24th.—Captain Elliot retired from Canton in consequence of an edict of death being published against all introducers of opium into the Empire, leaving not more than twenty-seven foreigners behind him, and pointing out to them that Canton was a place in which they could no longer reside with either safety or honour. Captain Elliot had promised to use all his influence to prevent ships entering Cantonese waters, yet, on the other hand, Commissioner Lin was in reality most desirous that vessels should enter, provided their owners would sign a bond never again to bring opium. The foreign trade was fully recognised by Lin to be essential to the Imperial revenue, as it amounted to £10,000,000.

Most of the British community now abandoned Canton and removed to Macao. The energy and rashness of Lin's measures at this time and their gross inconsistency astonished even his own countrymen, and had he been warned with becoming dignity, he would probably have paused in his mad career. His violent and irreconcilable policy was the chief cause of the outbreak of hostilities.

1st June.—The edict to destroy the opium arrived. The Prefect of Canton gave a receipt for the 20,883 chests above referred to and burnt them.

Lin now appeared to have reached the pinnacle of his power, to have expelled the British, and to have made the Portuguese very submissive to his will. His fertile brain then schemed to gain possession of the Macao forts and to poison the English at Hong-Kong.

* The spacious and sheltered harbour of Hong-Kong, where supplies of live stock and vegetables were readily obtainable, even in seasons of difficulty, now became the resort of foreign vessels in Chinese waters. The hostility which Commissioner Lin determined to carry out against the English showed itself in his occupation of the Kowloon promontory, on the main land opposite to the harbour, by considerable bodies of troops.

At Macao measures were also taken by the Chinese authorities to harass and annoy the British refugees, by intercepting the supplies of food from the mainland, upon which the Portuguese settlement there exclusively depended, and by compelling all the Chinese servants in the employ of the British to quit their houses, and forbidding all sale of provisions to them.

Macao.

September.—Captain Elliot issued the following proclamation:—

"The men of the English nation desire nothing but peace, but they cannot submit to be poisoned and starved. The Imperial cruisers they have no wish to molest or impede, but these must not prevent the people from selling. To deprive men of food is the act only of the unfriendly and the hostile."

On the 23rd, Captain Elliot, fearing to compromise the Portuguese, quitted Macao, and recommended all Her Britannic Majesty's subjects to accompany him to Hong-Kong.

* Ouchterlony.

During this time the American Consul and American merchants resided at Canton.

On the 31st August, all villagers were incited by proclamation to fire upon and destroy or drive back the English whenever they were seen to approach their shores in search of food or water. On receipt of this document, Captain Elliot called upon Captain
Blockade of Canton. Smith to establish a blockade of the port of Canton ; a public notice of the blockade was issued on the 11th September. It was never rigidly enforced. A few days previous to this declaration the harbour of Kow-loon had been made the scene of the first appeal to arms, Captain Douglas having successfully dispersed some war junks, whose presence before the town of Kow-loon prevented the supply of provisions.

About this time a desperate outrage was committed upon a small brig sailing under Spanish colours within three miles of the batteries of Macao, under the suspicion that the vessel was English and that she contained opium.

October.—Early in September, Her Majesty's Ship *Hyacinth* had joined the *Volage*. These corvettes, Captain Elliot being on board the *Volage*, proceeded on the 28th October to the Bogue, where a communication was sent on shore threatening active measures of retaliation should British shipping be molested. On the following morning, the corvettes in the meanwhile having dropped two or three miles down the river, the despatch was returned unopened,
War junks dispersed. and shortly afterwards 29 war junks approached with hostile intentions. A sharp action ensued, resulting in the rout of the Chinese with the loss of three junks sunk and three captured.

Subsequently the British ships were for the most part moved from Kow-loon bay to Urmston harbour, also known as Toang-ku roads, below the Bogue, at the mouth of the river, the anchorage at the former place being rendered unsafe by the erection of batteries commanding it, and the frequent drifting of fire junks upon the shipping.

The close of the memorable year 1839 found the two Empires in a position of undisguised hostility.

During the early part of 1840,* the majority
 1840. of the British community resided on board merchant ships at the anchorage of Toang-ku, near the island of Lin-tin.

Early in January the Emperor issued an edict expressing his satisfaction at the stoppage of all British trade. The tone now adopted by Lin became undisguisedly hostile, and large bounties were set upon the heads of the British and the populace incited to destroy them as noxious reptiles.

Every means having failed to arrange matters with the Chinese authorities there was no alternative but to awaken the Emperor and his ministers to a sense of justice.†

* Ouchterlony.

† Martin, Volume II, page 31.

The whole tenor of Lord Palmerston's instructions was to demand reparation for past injuries and some security for the future.

The critical state of affairs now, however, at last engaged the serious attention of Her Majesty's Government.

Early in the year, orders were received from England by the Governor-General of India to organise a small, but efficient, force for service in China, to start from Calcutta and Madras as soon as the verge of the northerly monsoon should approach. Reprisals were directed to be made in the China seas, and an embargo placed on Chinese vessels.

The war thus proclaimed was not popular in England, from the mistaken notion that it was an unjust war, undertaken to compel the importation of opium, an article of commerce strictly forbidden by the Chinese laws.

Plausible as this view may appear, its fallacy and evil tendency were equally obvious to all who, from extensive personal intercourse with the Chinese and from the means and opportunities of forming correct opinions on the subject of our past and present relations with the Empire, were well qualified to pronounce upon its merits. That it was on our part just and unavoidable, and that the demands of the Government were reasonable and based upon the principle of reciprocity in commercial intercourse, all must allow, after a dispassionate consideration of all the circumstances of the case. The Chinese ingeniously made the trade in opium to appear the *fons et origo* of the whole dispute, whilst the "demands for reparation and redress for injuries inflicted" were thrown into the background. The vacillating policy of our diplomatic agents also favoured this view, and justified the Chinese in the eyes of foreigners at a distance.

HOSTILITIES, 1840.*

The Eastern Expeditionary Force.

A compact and serviceable body of troops, mustering about 3,600 bayonets with a due proportion of artillery and ordnance stores from India and a squadron of three men-of-war and two steamers, assembled at Singapore early in May. Later on in May, Captain Sir Gordon Bremer took command of the squadron,† then consisting of the *Wellesley*, 74; *Oonway*, 28; *Alligator*, 28; *Cruiser*, 18; *Larne*, 20; *Algerine*, 10; *Battlesnake*, 6; *Atalanta* and the *Madagascar*, steamers of the Indian service. With these were 26 transports and store-ships, having on board Her Majesty's 18th, 26th, and 49th Regiments of Foot; 1 battalion of Bengal Sepoys, volunteers collected from ten regiments of the line; two batteries of Royal Artillery with 9-pounder field-pieces and 12-pounder howitzers; 2 companies of Sappers and Miners, and a large Engineer establishment from Madras.

Colonel Burrell, 18th Regiment, commanded the troops at the rendezvous; Colonel Cameron, of the Cameronians, was second in command.

*Ouchterlony.

† Martin, Volume II, page 39, states that the squadron amounted to 15 ships-of-war, 6 steamers, 26 transports, with about 4,000 men of the land forces on board.

After a detention of three weeks at Singapore, the squadron, having set sail, arrived off the Ladrões, near Macao, on the 21st June.

The Commodore, Sir Gordon Bremer, and Captain Elliot, the Superintendent of Trade, met to concert measures at Macao.

Blockade of Canton. A notice was issued establishing a blockade of the river and port of Canton from the 28th June 1840.

A circular was also issued to the forces, reminding them that the object of the war was to obtain satisfaction, not from the people, but from the Government, and exhorting them to adopt, in their intercourse with the former, all the means in their power to conciliate their good-will.

June 1840.—On the 24th of June the fleet proceeded northward, a small force only being left at the Bogue to maintain the blockade.

*** July 1840.**—On the 4th July, the *Wellesley* and other ships of the squadron entered the harbour of Ting-hai, the capital of Chusan, and, without the slightest attempt being made to prevent them, dropped their anchors close in shore.

On the morning of the 5th July, all the transports entered the harbour. The Chinese, who were altogether unprepared for this hostile visit, nevertheless made a show of resistance. The British men-of-war anchored in a line at a distance of 200 yards from the wharf. They consisted of the *Wellesley*, 74; *Conway* and *Alligator*, 28; *Cruiser* and *Algerine*, 18; and ten gun-brigs†. The bombardment of Ting-hai commenced at 2 P.M., and lasted but a few minutes, when the fire of the enemy generally ceased, and the

Bombardment of Ting-hai.

soldiers on the wharfs dispersed.

The grenadiers of the 18th Royal Irish and a detachment of the Royal Marines landed and occupied Joss-House Hill, to the right of the suburb of Ting-hai. Some guns of the Madras Artillery, the Cameronians, and

Storming of Ting-hai. a detachment of Sappers also landed, and defiling through the narrow streets near the water's edge, gained a partially cultivated plain within 500 yards of the city ramparts, whence fire was opened against them. The fire of the Chinese had but little effect, but the continued din of gongs and display of banners within the city indicated that a serious resistance might be expected. No attack was made that night, the troops bivouacking in the suburbs.

In spite of all precautions the men broke into extensive stores of "*samshu*" (a strong spirit distilled from rice), and the Chinese of the lowest class commenced to plunder; before midnight a conflagration broke out.

* When it became known, early in 1840, that a force was actually approaching to take redress for the outrages committed in the two Maritime Provinces of Canton and Fukien, speculations became rife as to the probable point of attack. The navy of the latter province had always, from the maritime habits of the people, been considered the most effective of the Empire, and might now expect to be called into action. Few warlike preparations were made at Chusan, and after the attack there the Chinese were greatly perplexed to understand why our blow should have been struck in that quarter, where they were not prepared, rather than at Canton, where the grievances arose, and where they were accordingly expecting our attack. The Chinese Government, rather than it should be supposed a hostile attack could be contemplated, had issued proclamations at Chusan, stating that the English were proceeding there for commercial purposes, contrary to the law.—*Davis*.

† Martin.

Captain Pears and a party of Engineers reconnoitred the approaches to the city gates during the night, and found them to present no great obstacle to a *coup-de-main*. The party, crossing the front of an advanced picquet, was fired upon, and the alarm thus caused spread throughout the force which stood to their arms.

When morning dawned, Colonel Burrell advanced with a party of the 18th Regiment, only to find the city abandoned and the gates blocked by a few grain-bags. The city was almost deserted; a proclamation was issued calculated to allay the fears of the inhabitants.

On the day of occupation, the 5th July, Admiral Elliot arrived in Her Majesty's Ship *Melville*; whilst endeavouring to enter the inner harbour the ship struck on a pointed rock and received serious damage.

Regulations were drawn up for the government of the island, Colonel Burrell being appointed Military Commandant and Civil Commissioner.

A messenger was despatched in a steamer to Chin-hai, at the mouth of the Ningpo river, to deliver to the authorities there a copy of Lord Palmerston's letter to the chief advisers of the Emperor. The letter was returned with an intimation that its contents and style were not such as could be exposed to the glance of the Imperial eye.

Captain Bouchier, of the *Blonde* frigate, 42, was charged with a similar commission to Amoy, where, on the refusal of the Mandarins to receive the letter or to hold any communication with the frigate, and on their firing treacherously on an unarmed boat, the frigate opened her broad-side upon the fort and town walls. No troops were landed, there being none available for land service. The Chinese made the most of the frigate quitting the harbour without landing troops, ascribed it to fear, and reported to Peking that a victory had been gained and the barbarians beaten off.

A blockade of the Ningpo river and of the coast northward, as far as the Yang-tse-kiang, being proclaimed, and the Expedition to Pei-ho. *Conway* left to explore the mouth of the latter river a squadron* consisting of the *Wellesley*, 74; the *Blonde*, 42; the *Modeste*, 20; *Pylades*, 20; the *Volage*, and *Madagascar* steamer, and two or three transports, sailed for the Pei-ho.

Colonel Burrell did not permit any of the public buildings or temples in the city of Ting-hai to be occupied, with the exception of that crowning Joss-House Hill, held by the 18th Regiment, and which was converted into a strong post of defence; the rest of the force occupied tents, exposed by day to the glare of a fierce sun and by night to the unwholesome exhalations which arose from the damp irrigated soil and paddy fields. Fever and dysentery in consequence soon made fatal ravages amongst the men; an application made for the use of an unemployed transport as a hospital ship being refused.

* Martin, Volume II. page 45, states a large fleet proceeded northwards.

The table below shows the admissions into hospital and deaths which occurred in the European regiments from the 13th July to the 31st December 1840:—

	MADRAS ARTILLERY.		18TH REGIMENT.		26TH REGIMENT.		49TH REGIMENT.		TOTAL.	
	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.
Diarrhoea ...	81	3	234	3	324	63	190	1	829	70
Dysentery ...	48	7	160	82	85	65	568	114	959	218
Fever, continued ...	16	...	15	...	56	1	169	1	255	2
" remittent ...	...	...	1	1	4	5	...	...	6	6
" intermittent ...	363	3	771	1	864	86	657	1	2,654	91
Other diseases ...	69	3	160	15	112	18	296	25	627	61
TOTAL ...	675	16	1,341	53	1,545	238	1,968	143	5,329	448

List of the British Naval Forces in Chinese waters during July and August 1840.

Melville, 74, flag ship ... { Rear-Admiral Sir G. Elliot, K.C.B.
 { Captain the Honorable R. S. Dundas.
Wellesley, 74 ... { Commodore Sir J. Gordon Bremer, K.C.B.
 { Captain T. Maitland.

Blenheim, 74—Captain Sir H. Fleming Senhouse, K.C.B.

Druid, 44—Lieut. H. Smith.

Blonde, 44—Lieut. F. Bourchier.

Conway, 28—Lieut. C. Bethune.

Volage, 28—Lieut. G. Elliot.

Alligator, 28—Lieut. H. Kuper.

Lorne, 20—Lieut. J. Blake.

Hyacinth, 20—Lieut. W. Warren.

Modeste, 20—Lieut. H. Eyres.

Pylades, 20—Lieut. T. Anson.

Nimrod, 20—Lieut. C. Barlow.

Cruiser, 18—Lieut. H. Giffard.

Columbine, 18—Lieut. T. Clarke.

Algerine, 10—Lieut. T. Mosson.

Rattlesnake, troop-ship—Lieut. Brodie.

Hon. East India Company's Armed Steamers.

Queen—Captain Warden.

Madagascar.—Captain Dicey.

Atalanta—Captain Rogers.

Enterprise—Captain West.

* The Governor of the opposite province of Chê-kiang, in reporting the operations of the British fleet, expatiated on the excellence of their ships and the noble stature of the seamen and marines, praised the magistrate and registrar of the town, who committed suicide, and blamed the Vice-Admiral for giving up the city, when 1,000 disposable troops remained.

He also reported that he was about to throw up works for the defence of the approaches to Chin-hai, to sink vessels in the channel, drive stakes into the river, and close the entrance with a chain.

His Imperial Majesty, in his correspondence with the above-named governor, allowed that some excuse ought to be made for the suddenness

of the attack on Ting-hai by powerful men-of-war, still that the officers in command of the island must have lost all courage to permit its capture and should be punished by degradation, and be delivered over to the board of punishment. Wuta-jin, the General, unable to redeem his offence by the extermination of the barbarians, perished miserably in prison.

His Majesty ascribed this warlike demonstration to the extermination of the opium traffic in the Canton province and the stoppage of British trade, and was not, he stated, unexpected by him.

He denounced the capture of Ting-hai as a most detestable act, but considered that the landing of 3,000 or 4,000 English barbarians rendered resistance impossible.

He finally ordered that the navy should be put in a proper state for making resistance, the coast line defended, and the barbarians exterminated.

Perceiving that the men-of-war were strong and armed with powerful guns, the Chinese gave up as hopeless the chances of an Imperial naval victory, landed the marines, and awaited events on land.

Directions from Peking were given to wait until the garrison of Ting-hai were exhausted and then to attack, but on no account were their forces to be divided, or the English allowed to sneak into the harbours.

Yeu, the admiral, and Tang, the governor of Fukien, were given high commands, and Elepoo, governor of Kiang-nau, was given plenipotentiary powers, with orders to undertake the defence of Chê-kiang province.

The closing of the seaports, by barring the seafaring population from obtaining a livelihood, occasioned their enlistment in large numbers as a naval militia. Notwithstanding the number of Chinese mariners on this coast, as strong, hardy and enduring as can be found in most countries, none came forward to fight on their own element, except as the conductors of that cowardly system of fire-rafts, which never once succeeded in either the hands of the Chinese or Burmese, though such a favourite with both. The rafts were always towed ashore by the boats of the English fleet, or were sent down the stream to burn at their leisure.

The exaggerated notion of the Chinese as to the great draft of our ships and the proportionate security of their shores and rivers, of the inactivity of our soldiers, and of the effect of climate upon their constitutions, led them to rest in a false security.

Edicts were issued against traitorous spies, resulting in the kidnapping of several Chinese in the British service and the stoppage of supplies.

The great desire of all parties, from the Imperial government downwards was to "wear out the barbarians;" hence every artifice was used to protract negotiations, and deceive us by falsehood and pretences.

It is instructive, as regards the Tatar government, to watch the tone assumed in their edicts and proclamations. Truth seems to have been the last thing considered; the main object was to deceive the people.

*Admiral Elliot, on board the *Wellesley*, proceeding northward with the Pi-chih-li expedition, passed the promontory of Shantung on

the 5th August, and on the 9th anchored off the mouth of the Pei-ho, in six fathoms at low tide, at a considerable distance (eight or nine miles) from the low mud banks which gird it.

Expedition to the Pei-ho.

Crossing the bar on a spring tide, the *Wellesley*, drawing $11\frac{1}{2}$ feet, anchored unexpectedly off the Taku forts on the 10th, causing immense astonishment to the multitudes who assembled to gaze at her.

Keesen,* a member of the Imperial Cabinet and governor of Pi-chih-li, arrived in the vicinity of Taku with the Imperial authority to receive any communication which the foreigners might wish to send to the Court of Peking; waiting the arrival of a messenger of consideration and rank, the *Wellesley* rejoined the fleet outside the bar. On the 13th a liberal supply of bullocks, sheep, and poultry was sent out to the fleet.

On the 15th, an aide-de-camp of the governor arrived, to whom Lord Palmerston's message was delivered, and to which an answer was to be delivered in ten days. During this interval the fleet scattered in quest of

Supplies. geographical knowledge and the much urgently needed information regarding supplies. The

Blonde, *Modeste*, and *Ernaud*, transport, visited the coast of Manchuria, and ascertained that cattle in abundance were to be procured near the shore and coal near Fu-chow, a trading town of that district.

The *Wellesley* visited the Mia-tau group of islands and found cattle and other live stock plentiful, while similar discoveries were made by the *Pylades* and *Volage* on the western shore.

Returning to their former anchorage on the 27th August, no sign of an Imperial messenger was discernible. Orders were issued the same evening for the light squadron, consisting of the *Pylades*, *Volage*, and *Modeste*, to weigh at daybreak

* The Emperor was encouraged at the outset to view the British as mere rebels and pirates, and the expedition of our Plenipotentiary in August 1840 to the mouth of the Pei-ho alone brought the matter home to his doors. At that time, Keesen, a Manchu Tartar, of insinuating manners and great talent, swayed the Emperor's councils at Peking, and enjoyed his personal friendship. His covetousness was as grasping as his ambition, and peculation, bribes, confiscations, and speculations made him the richest subject of China.

Regarding the quarrel with England he held prudent and moderate views, which contrasted strongly with those of Commissioner Lin, with whom the majority of the Council sided. On this account, when the British squadron appeared at the mouth of the Pei-ho, he was appointed negotiator; his tact and imperturbable suavity well fitted him for the duty, to himself eventually so disastrous in results, and he pledged himself to remove the unwelcome squadron and to weary his opponents by delay, by artfully avoiding all adjustments, and holding out vague promises of indemnification for wrongs inflicted. He induced our squadron to sail for Canton when experience had shown how little could be effected by negotiation. His instructions were couched in the following terms: "The English barbarians complain that the degraded officers Lin and Teng, (degraded because, when appointed to manage the opium disputes at Canton, after two years, instead of annihilating the traffic, they had caused the barbarians to repair to the vicinity of the capital, an unpardonable offence,) did not adhere to their original assurances, and hence the present troubles. As their language is respectful and yielding, (Keesen had re-worded the Foreign Office letter to fit it for the Imperial eye) Keesen is appointed acting governor of Kwan-tung, carefully to search into these matters. If the barbarians will repent, become humble and submissive, they may still obtain a share of the tender favour of our Celestial dynasty towards strangers. Let nothing be done with precipitation; but Keesen is to manage this affair faithfully, and realise my intentions. Report this."

on the following morning, and to run in as close to the Taku forts as their draft would allow, the *Modeste* being directed to anchor abreast of the works flanking the river entrance. Armed boats were also prepared to aid this squadron. On its approach, a messenger arrived from Keeshen requesting that Captain Elliot, as second officer on the Commission, would discuss on shore with him matters too difficult to fully ventilate in the limited space of an official despatch.

A conference was held on shore on the 30th August, Captain Elliot being received with the utmost courtesy and distinction by Keeshen, this being the first instance of a Chinese dignitary consenting to confer personally* upon terms of equality with a subject of Great Britain.

The result of the conference was a further reference to Peking and additional delay.

† During it, it became apparent that no exertion had been spared by the Chinese since the 11th to repair the forts and mount additional guns and gingalls to command the river entrance. The white tops of numerous tents, too, indicated the encampment of a considerable army; that it existed is doubtful, it being a well-known Chinese practice to pitch empty tents or to throw up earthworks in form of tents and to whitewash their tops so as to indicate the presence of troops.

On the 8th of September the Emperor's reply arrived, that the matters in question could be better discussed at Canton, whither Keeshen had been deputed.

This being acceded to,‡ the fleet left the anchorage on the 15th, steering for the Mia-tau islands and promontory of Shan-tung.

Keeshen, an astute courtier, was directed to supersede at Canton Commissioner Lin, whose course seemed almost run, and who was ordered to Peking to answer for his conduct. Nevertheless, he was allowed to remain as viceroy at Canton, and by his machinations greatly hampered the proceedings of Keeshen and influenced public opinion against him.

Keeshen adopted a policy of conciliation in contrast to that of the mad violence on which Lin depended, and professed to trust rather to *truth* and the *utmost reason* to attain his ends. But these are mere figures of speech among the Chinese, and have little of the nature of those principles which they are supposed to indicate.

On the day after the arrival of the squadron at Chusan, the Admiral issued an official notification of the truce agreed upon with the Imperial High Commissioner (Keeshen) and called upon all to respect it. This truce was limited to the

* A condescension adopted in order that he might more successfully overreach his adversary.—*Martin*.

† In the meanwhile orders were issued to the authorities along the coast to abstain from provoking hostilities by firing on British vessels, and to observe a truce. Keeshen, however, strengthened the Pei-ho defences; but the works erected were quite Chinese, and the large expenditure upon them ill-bestowed; on the principle of building a bridge for a retiring enemy, provisions were liberally supplied, and all vied in expediting the departure of the squadron.—*Davis*.

‡ Unfortunately, Captain Elliot, contrary to the instructions of Lord Palmerston, quitted his advantageous position at the Pei-ho, where he might have dictated better terms of peace than were subsequently accepted at Nan-king.—*Martin*.

latitude of Chusan, and was not in force in the south. Elepoo, the viceroy of Che-kiang, evinced his satisfaction by sending over bullocks to Chusan for the use of the British there.

Enquiries were set on foot to investigate the cause of the great sickness prevalent amongst the troops occupying Chusan, and active measures were at once taken to fortify the British position there.

During the construction of these works it became apparent that a considerable portion of the hill top consisted of a vast accumulation of coffins, built up in tiers with earth and stones, so as to form a mound; it became necessary to cut into this mound of corruption, which, to avoid infection, was burnt to ashes by means of the wood furnished by the coffins.

The low, swampy rice grounds surrounding the town, improper drainage, exposure to a hot sun, and indulgence in *sam-shu*, all combined to produce fever, dysentery, and various other complaints, which were subsequently mitigated by better arrangements.

During the months of September and October 1840, Chinese spies and others commenced a practice of kidnapping, which was subsequently carried to a serious extent and embittered our men very much against the Chinese. Large rewards were paid by the Mandarins of Ningpo for prisoners, whether Europeans or natives of India.

The passengers and crew of the transport brig, the *Kite*, shipwrecked near Cha-pu, were seized, placed in cages and carried to Ningpo, to be there heavily ironed and thrust into prison. These prisoners the Chinese refused to release until the evacuation of Chusan by the British, but promised that every care and attention should be bestowed upon them.

On every occasion the braggart Mandarins as a rule wrote despatches describing the discomfiture of the barbarian, and on the occasion of the *Kite* going on shore, the capture of a few shipwrecked seamen and a helpless female was lauded into an exploit and occasioned the promotion of several officers, some of whom received the decoration of peacocks' feathers.

Two transports, full of invalids, were despatched to Manilla, whence however, (the Spanish authorities having placed them in quarantine,) the voyage was continued to Hong-Kong.

Having improved the location of the troops remaining in Chusan, on the 15th November, the Admiral, with the greater part of the fleet, took his departure for the south, to meet Keeshen, leaving Captain Bouchier, of the *Blonde*, in command of the naval force, with the *Conway*, *Alligator*, *Nimrod*, *Algerine*, and *Young Hebe*, and the *Atalanta* steamer.

During the summer, the mouths of the Yang-tse-kiang and the neighbouring seas, the Chusan Archipelago, &c., had been carefully surveyed and mapped under the superintendence of specially selected naval officers. No attempt was made to molest the ships or boats during the surveying operations by war junks or armed row-boats; but whenever want of provisions necessitated a foraging excursion on shore, the party almost always found their way beset by armed bands of Chinese, and during skirmishes, which

frequently took place, some loss on the part of the British was experienced.*

During the five months of negotiation in the north, Macao, which was hitherto considered neutral ground, had assumed a very hostile and disturbed appearance, from the large influx of Chinese troops, and the frequent attacks on British subjects, and the abduction of the Reverend V. Stanton on the 6th August. Everything indicated that an attack would be made on Macao, and up to the 19th August all efforts proved ineffectual to obtain a release of Mr. Stanton.†

Captain Smith clearly perceiving that it was the intention of the Chinese to cut off all communication between Macao and the main land, anticipated their designs, and brought the guns of her Majesty's ships *Larne* and *Rhacynth*, with those of the steamer *Enterprise* and the *Louisa* cutter, to bear against the barrier across the spit of land connecting the Portuguese and Chinese possessions. Their fire was speedily answered by the Chinese from a battery of 17 guns constructed on the beach, north of the barrier. A brisk fire was kept up for an hour on both sides, when a single gun being landed on the beach, the Chinese guns were soon silenced; and about 300 troops, composed of marines, the small-arm men of the *Druid* and two companies, Bengal Volunteers, landing, the Chinese were driven from every position, although numbering 5,000 strong. All was over in four hours, barracks burnt, and the vessels retired to their usual anchorage. Four men were wounded on the British side.

‡ The Chinese withdrew to a fort near Casa Bianca, which they repaired and occupied, removing thither their spiked guns.

About this time an Order in Council was issued, establishing Courts of Admiralty in China for the adjudication of prizes, &c. It being, however, the object of the British Government to limit the operations of the expeditionary force to the simple occupation of an advantageous insular position to serve as a depôt, and to the establishment of a close blockade of all the more important seaports, and thereby induce the imperial cabinet to accede to conditions, this Order in Council remained practically inoperative. The utter fallacy of the popular notion of this means of coercing a Chinese Emperor has since been fully established.§

The *Blenheim* took up a station of Amoy to enforce the blockade

Blockade of Amoy. in its vicinity, to harass the coast, and destroy any war junks that might attempt to communicate between Amoy and Ningpo.

The *Alligator*, 28 guns, in company with the *Braemar* armed transport both well manned, relieved the *Blenheim* on her departure for Chusan,

* Ouchterlony.

† Martin.

‡ Neither Commissioner Lin, the originator of the struggle at Canton nor Admiral Kwan at the Bogue fort had the resolution to strike a blow.

§ The defeat of the troops at the Macao barrier was suppressed. After it the Chinese troops became disheartened, and their pay being in arrears, they gradually dispersed.—Davis.

§ Ouchterlony.

but were found to be of inadequate force, and were compelled to withdraw from before the defences which the active military authorities of the province had thrown up to cover the entrance since the visit of the *Blonde*.

In fortifying Amoy, 100,000 *taels* were expended; additional sums were asked for to surround the whole neighbourhood with stone walls and embrasures of immense thickness. These works proved eventually to be most useless; the amount embezzled by the Mandarins was, however, said to be greater than the actual outlay.

A considerable fleet of Fukien war junks was dispersed and severely handled, but on an attempt being made to pass the formidable line of batteries along the low land flanking the passage between the island of Ku-lang-su and the harbour of Amoy, the storm of shot which flew around the *Alligator*, and the insufficient range of his own guns, brass 12-pounders, caused Captain Küper to cease the unequal contest.

A hospital was established at Ting-hai, into which, between September and the close of the year, upwards of 1,600 Chinese patients were admitted.

No further active operations took place during the year 1840.

By the end of the year the force at the mouth of the Canton river had been reinforced by the *Calliope* and *Samarang* and the 37th Regiment, Madras Native Infantry.

The plenipotentiaries, convinced by Elepoo, the viceroy of the provinces of Kiang-si and Kiang-su, of the sincerity of the Court of Peking, finally left Chusan on the 15th November, a general truce being proclaimed on the 8th November. The fleet arrived in Macao roads on the 20th November, before which date Keeshen had arrived in Canton.

The Admiral (the *Melville* now bore his flag) ordered the *Queen* steamer on the 21st November to proceed to the Bogue and deliver a despatch from Elepoo, and announce the arrival of the plenipotentiaries.

The boat bearing the despatch and communication towards Chuenpee fort, with a white flag flying in her stern sheets, was fired upon, whereupon the *Queen*, after throwing a few shot and shell within the Chinese lines, returned to Macao. The Chinese authorities tendered an apology for the untoward mistake of the commandant of Chuenpee.

On the 26th November, Keeshen made his public entry into Canton; on the 11th December Mr. Stanton was released and conveyed to the *Wellesley* in Toang-ku bay. On the 29th November, Rear-Admiral of the Blue, the Honourable G. Elliot, on account of severe illness, resigned the command of the fleet into the hands of Commodore Sir G. Bremer. Admiral Elliot sailed from Chusan in the *Volage* on the 7th December 1840.

The policy of Keeshen was pacific; but unfortunately, political intrigue was too strong in Peking, and the partisans of Lin and the advocates of the extermination of the hated foreigner beset the Emperor with representations as false as their tendency was evil.

The state of the public mind in Canton and the activity displayed by the military authorities at the Bogue tended to create a belief that hostilities were but dormant.

Captain Elliot remained at Lintin, near the Bogue, supported by a

formidable fleet now joined by the *Nemesis* iron steamer, specially built for river service.

Towards the close of the year the arrival of the Manilla convalescents from Chusan and seven companies of the 37th Madras Native Infantry from India, which were landed on an island near Lintin, south of the Bogue, placed at the disposal of Captain Elliot a complete and effective force.

HOSTILITIES, 1841.*

When it became evident that the object of Keeshen in prolonging negotiations was to gain time for the completion of his arrangements for defence, Captain Elliot determined on active hostilities, and on the morning of the 7th January 1841, the troops destined for the land attack on the Chuenpee fort having been put on board the *Nemesis*, *Enterprise* and *Madagascar* steamers, were landed two miles to the southward of the point of attack; while the eastern squadron, consisting of the *Calliope*, *Larne*, *Hyacinth*, and *Queen* and *Nemesis* steamers stood in until abreast of the Chinese batteries, when they dropped their anchors and commenced the action.

The total naval force consisted of the *Wellesley*, 74; *Blenheim*, 74; *Melville*, 74; *Calliope*; *Samarang*, 28; *Druid*, 44; *Sulphur*; *Larne*, 18; *Hyacinth*, 18; *Modeste*, 18; *Columbine*, 18; *Starling* and steamers *Queen*, *Nemesis*, *Madagascar* and *Enterprise*.

The troops† landed, about 1,400 in number, consisted of a battalion of the Royal Marines, convalescents of the 18th, 26th, and 49th Regiments, the regiment of Bengal Volunteers, the 37th Regiment, Madras Native Infantry, with a detachment of Royal Artillery and Madras Artillery. Major Pratt of the 26th Regiment, in command, formed them into two columns and pushed on immediately for the fort.

The ships of war ceased to fire upon the fort so soon as the heads of the land columns came under fire of its ramparts. The fort was carried at a rush, the boats of the squadron at the same time pushing on shore and entering it from the sea-side.

The Chinese made but a show of resistance, and, acting under the unfortunate impression that our troops gave no quarter, lost largely during their endeavours to escape. Those who witnessed the individual bravery, be it courage or be it despair, of the Chinese during the war, will be slow to stamp them as a cowardly people, however inefficient they may have been when fighting in masses against European discipline and weapons.

* Ouchterlony.

	Regiment or Corps.	N. C. O. & men.
†	Royal Artillery	33
	Seamen	137
	Detachments, 26th and 49th Regiments	104
	Royal Marines	504
	37th Madras Native Infantry	607
	Bengal Volunteers	78
		<hr/> 1,481

together with 80 seamen attached to the guns (one 24-pounder howitzer and two field pieces).—(Bernard). The landing took place at 8.30 A.M.

The loss of the British amounted to 38 men wounded, many of them slightly. During the operations at Chuenpee, on the northern bank of the river, Captain Scott, R.N., with the western squadron, consisting of the *Samarang* (26), *Druid* (44), *Modeste* (18), and *Columbine* (16), proceeded a short distance higher up towards Tycocktow fort, a powerful battery built upon the water's edge, and, anchoring abreast of it, bombarded it for the space of an hour, when, the fire of the Chinese slackening, marines and troops were landed, who, climbing over the shattered parapet, soon drove the enemy from their works after a hand-to-hand combat, several of the assailants receiving wounds from the cold steel—a rare occurrence in Chinese warfare. The *Nemesis* displayed the great utility of small iron vessels of light draught in river service. After disembarking the whole of the 37th Regiment, Madras Native Infantry, below Chuenpee, she ran alongside the work and threw shells into the upper fort, and when compelled to cease fire from the near approach of the troops, she ran up close to the sea battery and poured through the embrasures destructive rounds of grape as she passed; then, pushing on over the shallows into Anson bay, into the midst of the war junks lying at anchor, she threw Congreve rockets with startling effect. The first rocket discharged blew up a junk with a terrific explosion, causing the greatest consternation. Aided by a flotilla of boats from the squadron, she proceeded on her course across the bay, completely destroying the whole junk fleet, eleven in number.

In the meantime, the 74-gun ships proceeded higher up the river, to prepare for the attack upon the defences of the Bogue, as soon as the troops and squadron engaged in the reduction of Chuenpee and Tycocktow had been withdrawn from the forts.

During the 7th and 8th January the captured works were dismantled, the guns (97 in number) disabled, and all buildings and stores destroyed. Many of the guns were not mounted, many were only 6-pounders; the majority corresponded to our 12-pounders. On our side 40 men were wounded and none killed, showing that the Chinese were most inefficiently armed.

On the 8th the troops re-embarked, and the fleet, in the wake of the *Blenheim*, under sail, gradually closed upon the great Anunghoy battery, which formed the main defence of the Bogue, when a flag of truce was sent on board the *Wellesley*, with a request from Admiral Kwan, the commander-in-chief, on the part of Keeshen, that hostilities might be suspended pending a further discussion of the terms for a treaty to be at once entered into.

An armistice was agreed to on the 8th January, to give the High Commissioner time to consider the terms offered for his acceptance.

Captain Elliot's policy has been adversely criticised in that, under the yet unconquered guns of Anunghoy, he acceded to

Armistice.

the pacific desire of one who had been the ostensible agent in the deceit and contumacy which had been practised upon Her Britannic Majesty's plenipotentiaries, after the ample experience which had been gained of the little dependence that could be placed upon the Imperial word, and at a time when the British force was in a position to enforce unconditional submission and obtain ample security for future good faith.

The preliminary peace arrangements involved the following conditions, viz :—

- 1st.—The cession of the island and harbour of Hong-Kong, in perpetuity, to the British Crown ;
- 2nd.—An indemnity of six millions of dollars ;
- 3rd.—Direct official intercourse between the two countries upon an equal footing ;
- 4th.—The trade of Canton to be opened within ten days after the Chinese new year.

Hong-Kong was taken formal possession of on the 26th January, and shortly afterwards proclamations were issued relating to the government of the island, &c. The evacuation of Chusan by the British* was at once ordered, and Keeshen at the same time directed Elepoo to deliver over the Ningpo prisoners to the ship-of-war (*Columbine*) that should be sent to receive them. Their release was effected just in time to save them from a violent death.

Our precipitate restoration of Chusan was calculated to impede the settlement of our dispute with the Chinese, it being looked upon by them as a sign of weakness and defeat, and was so represented by Elepoo to the Emperor, whilst the occupation of Hong-Kong highly exasperated the Peking Court. Keeshen was reproved, and Yihshan, Lungwan, and Yang-fang appointed Joint Commissioners for the settlement of foreign affairs. On the 27th January, the plenipotentiaries met at the Second Bar, below Whampoa. On the 13th February a second interview took place, without any direct results affecting the opening of trade accruing.

In the meantime the Chinese massed troops in the vicinity of Canton and strengthened the river defences, neglecting no precaution which their limited knowledge suggested to them. Amongst other wild projects suggested to vanquish the British were that expert divers should be employed to bore holes in their ships, while other parties, boarding at night by stealth, were to saw their masts asunder and to massacre the crews.

A written ratification of the Chuenpee treaty not being accorded, Captain Elliot reluctantly ordered the resumption of hostilities. Keeshen was conscious of his own weakness, and desired to avert the storm, but

† Hostilities resumed. was fairly driven into extreme measures by positive orders from Peking, where peace was a prescribed word, an Imperial edict having been issued offering rewards for the heads

					Rank & File.
* 18th Regiment ...	...	...	...	...	487
26th " ...	...	...	...	...	291
49th " ...	...	...	...	...	326
Bengal Volunteers	...	...	...	...	402
Madras Artillery	...	...	...	...	185
" Sappers	...	...	...	...	227

composed the Chusan garrison. The force was glad to quit a place where many of them had found premature graves.

† Throughout the Canton negotiations and throughout the war, the implacable hostility and unwillingness to yield a single point were, with only a few exceptions, displayed by the Mandarins of Chinese extraction ; while the moderate advice and the ultimate peace itself were the work of Manchu Tartars. Lin the Chinese, and Keeshen the Tatar, were the types, of their respective parties.

of Sir G. Bremer and Captain Elliot. On the 20th February, Sir G. Bremer proceeded to the vicinity of Anunghoy with the fleet, the light division of which consisted of the *Calliope*, *Samarang*, *Herald*, *Alligator*, *Sulphur*, and *Nemesis*. On the 23rd Captain Herbert, with the *Nemesis*

The Cantonese taught to hate and despise foreigners by their *literati* met Keeshen in a hostile spirit. Lin, as the champion of exclusiveness, was popular in proportion.

The pacific intentions of the former were frustrated by the discovery made, on the 6th January 1841, of an edict consigning to destruction all British ships and subjects. On the very next day, this perfidy was rewarded by the destruction of the forts at Chuenpee and Tycocktow; the Chinese losing many men and 173 guns spiked or otherwise disabled.

The Bogue forts would have shared the same fate, but Admiral Kwan asked for an armistice, which was unfortunately granted. In his report Keeshen says: "The Admiral yields to necessity, and has agreed to a truce with the barbarians merely to gain time and to be in a better state to resist them;" and again, "it appears to Your Majesty's slave that we are very deficient in means, and have not the shells and rockets used by the barbarians. We must, therefore, adopt other methods to stop them which will be easy, as they have opened negotiations."

The consternation at Peking on the capture of Chuenpee was great. Troops were directed to advance from the various provinces on Canton; Keeshen and Admiral Kwan were ordered to be severely punished. The army was directed to retake Ting-hai, and Keeshen, to arouse the patriotism of the nation, was to send the heads of the rebellious barbarians to Peking in baskets. The proclamation of the Emperor's brother was widely circulated, that he should never conclude peace with such despicable enemies.

Keeshen, aware of the uselessness of resistance, concluded a convention with Captain Elliot, by which Hong-Kong was ceded, and six millions of dollars agreed to be paid for the opium and trade to be reopened in ten days, with a direct official intercourse on equal terms.

Keeshen justified to the Emperor what he represented as only a temporary measure of necessity, by informing him that Canton lay at the mercy of the British, and that before the resumption of hostilities it was necessary to await the arrival of reinforcements, writing, "I only abide my time for exterminating them *whenever it can be done*;" and again, "the only Celestial favour they now ask is to be allowed to trade, as the whole nation has, in consequence of the stoppage of trade, been cut off from all means of gaining a livelihood."

The Cantonese considered that "the condescension of the minister was highly criminal." A despatch from Peking decide that "to give the English Hong-Kong as a place to store up arms and build fortresses, and to allow them to continue trading at Canton, was beyond the bounds of reason." "How great is the presumption and shamelessness of Keeshen!"

Keeshen was degraded, and without trial, at the mere dictum of his despotic master, thrown into prison, his wives and women sold by auction and his immense wealth, exceeding eight millions sterling, confiscated. He was afterwards partially restored to power and sent as a Resident to Tibet.

The convention, published on the 20th January, was rejected by the Emperor, and peace became a proscribed word.

The resumption of hostilities became inevitable. Chusan was unfortunately evacuated on the 24th of February, the day after the armistice had been broken to the south.

The foregoing and other foot notes (compiled from Chinese sources) will suffice to show how on all occasions the Emperor was deceived by his agents, and his councils swayed according as the party favouring the exclusion of foreigners from his dominions, or that advocating for them the rights to trade and of hospitable treatment, happened to be the most powerful.

The distance, the presumed insignificance, in comparison with China, of the nation which they had now to encounter, created a feeling of contemptuous security which nothing but a course of defeats could set right. The few, with Keeshen at their head, who had the intelligence to see things in their true light, and to act and advise accordingly, were treated as traitors. The majority flattered the Emperor's presumption and lulled his fears, proving by many abstract arguments that China was overwhelmingly superior to the invader.

The sentences in the first instance passed upon Keeshen and Elepoos prevented others entertaining their views.

and four pinnaces, attacked a Chinese force engaged in obstructing the river channel at the back of Anunghoy. The enemy's works, comprising a masked battery and field-works, were carried by the seamen and marines without the loss of a man; about 30 Chinese were killed and 80 guns spiked and untrunioned.

On the 25th, the fleet assembled near the island of South Wantong. Two channels exist by which vessels of any considerable burden can enter the Canton river, *viz.*, one on either side of North and South Wantong islands. The western passage was imperfectly known, the eastern being the ordinary passage taken. No pains had been spared to make

the western passage as difficult and dangerous as possible by bringing the fire of two formidable batteries, of 45 and 40 guns respectively, to bear upon it,—one constructed on the western extremity of North Wantong, the other on the right bank of the river. From Anunghoy a strong chain had been carried right across the eastern passage, to a rocky point near a formidable battery, which had for years existed on the eastern tongue of North Wantong, where its end was made fast, the chain being held up to within a few feet of the surface of the water by means of a line of rafts.

South Wantong island was unoccupied; advantage was taken of this neglect to there establish a battery which enfiladed the batteries on North Wantong.

On the 25th a working party of Royal and Madras Artillery, covered by 150 men of the 37th Madras Native Infantry and the *Nemesis*, erected a *sandbag battery* on a saddle in the centre of South Wantong, and on the morning of the 26th, three howitzers, two 8-inch iron and one 24-pounder, brass, were in position. The working party suffered no loss, although heavily fired upon during the night.

At daybreak the howitzers opened fire, and effectively shelled the low batteries at the extremities of North Wantong, as well as the camp formed along its southern slope, protected in front by a sandbag parapet connecting the masonry batteries, and having at intervals pieces of artillery mounted behind embrasures cut in commanding situations.

A calm and a strong ebb-tide prevented the co-operation of the fleet till 11 A.M. Yet, notwithstanding this, and that many guns in the southern horns of the half-moon batteries on North Wantong bore upon the South Wantong battery, no casualty occurred.

The *Blenheim* and *Queen* anchored close abreast of the great Anunghoy battery, and the *Melville* off the extremity of the fort, with her larboard bow guns bearing on the eastern half-moon battery of Wantong, and by noon the action here became general.

The *Wellesley*, *Druid*, and *Modesto* entered the western channel, and anchored abreast of the battery on North Wantong, which they engaged with starboard broadsides, while shot and shell were thrown from their larboard 68-pounders against a fort on the right bank, behind which was an extensive encampment of troops.

The advanced squadron, consisting of the *Calliope*, *Herald*, *Samarang*, *Alligator*, &c., passed on to the northward of the Chinese defences, firing

their starboard broadsides into the lower Wantong battery as they passed. The day was fine and the wind strong enough to clear away the smoke as fast as it arose.

After the cannonade had lasted an hour, Sir Le F. Senhouse landed with 300 seamen and marines under Anunghoy, and carried the works with but little resistance. North Wantong was carried in a like manner, the Chinese troops, 1,500 in number, flying in disorder and panic, when the British troops were seen nearing the shore.

At the commencement of the action, the principal officers of the troops deserted their men and escaped up-stream, ignobly abandoning them to their fate.

The *Nemesis*, with some boats of the *Wellesley*, at 4 P.M., proceeded to attack the Tycocktow fort and camp. Upon the marines landing from the boats, and entering by the embrasures of the forts, the Chinese abandoned their works and dispersed over the hills.

The tents, stores, houses, &c., were fired. The loss of the British was very small, five slightly wounded. Of the Chinese some 500 must have fallen, the proportion of Mandarins being very small. Amongst the number fell the valiant Admiral Kwan. Thirteen hundred prisoners were taken and set at liberty. Many were shot down by the Indian troops in consequence of their not understanding the command of the British naval officers to cease firing.

Some 400 pieces of cannon were captured, some 68-pounders and a good many 42, 32, 24, and 18-pounders; the majority, were however, of less calibres.

The enemy's magazines furnished an ample supply of powder, whereby the imposing granite fortifications were soon reduced to ruins.

The Works of North Wantong were left untouched, and were occupied on the 28th by a detachment of troops with some guns. The greater part of the ordnance taken, being next to useless, was destroyed.

Leaving the 74-gun ships and the transports at the Bogue, the advanced squadron under Captain Herbert of the *Calliope*, with the *Alligator*, *Herald*, *Sulphur*, *Modeste* and *Madagascar* and *Nemesis* steamers, proceeded up the river to attack a formidable position which the enemy had taken up at the Second Bar, where a strong raft had been constructed from bank to bank, flanked on one side by the guns of an extensive earthwork, in which were 2,000 troops, and on the other by the battery of the *Cambridge*, a ship which had been purchased by the Chinese for warlike purposes before the arrival of the expedition.

The attack on this position made on the 27th February resulted in the carrying of the intrenchments, the cutting of the raft, and the capture and destruction of the *Cambridge*. The *Cambridge* was heavily armed, but was moored head and stern in a manner to prohibit the use of her guns. The Chinese were not sufficiently acquainted with naval tactics to enable them to make the best use of the resources at their command.

Captain Herbert's squadron anchored at Whampoa reach, and on the 3rd March the *Sulphur*, with a division of boats, carried the river defences to Napier's island,—the *Herald*, *Alligator*, *Modeste*, and *Sulphur* anchoring off the island. The advantage of light-draft steamers during these operations was most marked.

The fall of the Bogue defences, considered to be impregnable by the Chinese, created a degree of alarm in the public mind without parallel since the Tatar conquest. On the 3rd March a suspension of hostilities was agreed to. This was a conciliatory piece of leniency on the part of the British, its negotiator, the Prefect of Canton, having no powers.

Hostilities resumed. Hostilities were resumed on the 7th March, and by the 18th, with a loss on the British side of an officer and six men wounded, the Dutch Folly was occupied, and all the river defences (very numerous) destroyed, including those of the Macao passage, without loss on the British side. The creeks and paddy fields surrounding the Chinese positions proved injurious to the Chinese themselves, for in passing these during a retreat they suffered heavy losses. Such impediments will be more than ever resorted to in future wars.

On the 20th March a suspension of hostilities was agreed to, and Canton re-opened to all who might proceed there for lawful trade. The Commissioner Yang issued a proclamation to that effect. Such forbearance on the British part was regarded by the Chinese as an evidence of conscious weakness. An Imperial edict was proclaimed, appointing Yihshan generalissimo and "*rebel-queller*." Keeshen was degraded and ordered to Peking. He was eventually restored to Imperial favour when later on it became evident that he had acted honestly in representing the futility of resisting the British forces.

On the 12th and 13th March the *Nemesis*, with a small flotilla of boats (3) in tow, threaded the shallow and narrow passages leading from the Broadway to the Canton river, carrying all the batteries met with in her course and destroying nine war junks and 105 pieces of cannon. Forts of old standing and solid construction were found to exist, built most probably to repel the attack of pirates who infested the Chinese waters. In the passage, Hou-Chung or Ha-chap, Fie-shu-kok, Heong-shan, Sheong-chap, Kong-how, and Tam-chow were passed. The British loss amounted to three men wounded. This exploit greatly surprised the Chinese who considered such a feat by a well-armed steamer impossible.

The armistice of the 20th March was entered into with Yang-fang, one of the Commissioners only, he being the only one present. Lung-wan and Yihshan brought with them, three weeks later, to Canton a large body of troops, imperfectly armed and badly organised.

After the armistice was concluded, a few of the light craft of Captain Herbert's squadron anchored off Canton, and the transports of the garrison of North Wantong remained at the Bogue, the rest of the force, together with the Chusan garrison, assembling at Hong-Kong, where Sir H. Gough, who had arrived from India on the 2nd March, lost no time in remodelling and re-organising it.

The regiment of Bengal Volunteers proceeded to Singapore, and all invalids were despatched to India and to Europe.

The *Melville* sailed for England, and the *Samarang*, the *Queen*, and *Madagascar* to Calcutta.

Early in April an edict was received from Peking, breathing vengeance against the *audacious rebels, the British*, declaring **War preparations.** that both powers could not stand under the same heaven, and annulling all the concessions made by the Imperial agents. Keeshen was declared to be a traitor, and Elepoo reproved for having permitted the barbarians to *retire* from Chusan, and for having liberated the captives. The Emperor's agents deceived him as to the real state of affairs. Measures of defence were actively pushed on in Chusan, and at Chin-hai and Amoy. Captain Stead, landing on Chusan island after its evacuation, was murdered, and all redress refused by the governor of Ché-kiang. Towards the middle of April large bodies of troops poured into Canton.

From a desire to avoid any measures which might interrupt the transmission of the annual supply of tea to England, Captain Elliot had refrained from taking serious notice of the warlike appearances above described, beyond preparing the main portion of the force to proceed northwards to resume possession of Chusan, and to act against Amoy, &c. The naval and military authorities thought much, but said little, yet wondered more at such proceedings, which were bound to result in the renewed expenditure of British treasure, labour, and life. Considerable reinforcements were expected from Calcutta to enable a force to be left in Hong-Kong, of a strength sufficient to protect it.

On the 20th May the main portion of the British force again passed the Bogue, and on the 21st the *Blenheim* anchored in the Macao passage, six miles below Canton. **Hostilities resumed.**

On the night of the 21st, without warning, numerous fire-rafts were sent adrift against the *Louisa* cutter and schooner *Aurora*, lying off the factories, and at the same time fire was opened from guns mounted in temporary batteries along the wharfs, and at the ends of the streets and lanes leading to the water's edge. The rafts were ingeniously constructed, being composed of boats chained together by twos and threes, so that, drifting down with the tide they might hang across the bows of a ship. The boats of the squadron invariably towed them clear. It being ascertained that the fire-rafts were prepared in the "Sulphur" creek, the *Nemesis* repaired there, and, aided by the boats of the *Calliope* and *Herald*, in three hours blew up 43 war junks and destroyed 32 fire-rafts. On the 23rd the *Sulphur* reconnoitred the Sulphur creek and discovered a practical landing-place at Tsing-poo.

The *Pylades* and *Modeste*, by way of the Macao passage, ran alongside the batteries, while the boats of the *Herald*, from Napier's reach, towed the fire-rafts clear of danger to the ships. - The *Nemesis* engaged the Shamien battery, her marines nearly silencing the work by firing at the embrasures, distinguishable only in the darkness by the flashing of the guns in their recesses. **Attack on the river batteries of Canton.**

The mob, finding the foreign factories deserted, destroyed and pillaged them. The main fleet assembled near Whampoa on the 23rd May, having sailed from Hong-Kong on the 18th.

On the 24th May the force was divided into two columns, the right being directed to land and occupy the factories (near the now Shamien site), the left to proceed up the Sulphur creek by way of Blenheim reach, previously reconnoitred, and to land at the village of Tsing-poo, being conveyed in Chinese decked passenger-boats collected during the reconnaissance of the 23rd.

On the 25th the left column landed under the command of Major-General Burrell, and marched against the heights to the north of Canton.

Four forts crowned these heights, mounting some 42 guns of various calibres, beside gingalls, &c.,—weak in themselves, but the advance to each of which was well swept by the walls of the city and the flanking high ground.

Four guns (two 6-pounders) and howitzers (two 12-pounders) having, through most extraordinary exertions on the part of the artillery, been brought up and placed in position within 300 or 400 yards of the forts, a heavy fire was opened upon them at 8 A.M., after which they were carried at the point of bayonet.

List of Troops engaged on the Heights above Canton on the 25th May, 1841.

LEFT BRIGADE—				Officers.	All other ranks.
Her Majesty's 49th Regiment	...	...	...	28	273
37th Regiment, Madras Native Infantry	...	...	...	15	215
Bengal Volunteers	...	...	...	4	112
				47	600
ARTILLERY BRIGADE—					
Royal Artillery	...	...	...	2	83
Madras "	...	...	...	10	231
" Sappers and Miners	...	...	...	4	137
				16	401
NAVAL BRIGADE—					
1st Battalion	...	...	...	11	172
2nd "	...	...	...	16	231
				27	403
FIRST BRIGADE—					
18th Royal Irish	...	...	...	25	495
Royal Marines	...	...	...	9	372
				34	867
Total				124	2,271
GRAND TOTAL				...	2,395

The artillery consisted of four 12-pounder howitzers, four 9-pounder field guns, and two 6-pounders; also three 5½-inch mortars and one hundred and fifty-two 32-pounder rockets.

The Chinese opened a heavy fire on the forts from their rampart guns and gingalls, causing considerable losses to their successful assailants. They also detached a party of some 500. Tatars to attack the landing-place

at Tsingpoo, who were, however, defeated by details hastily collected by Captain Hall of the *Nemesis*. An intrenched camp to the eastward was carried in the morning, not without considerable loss, by the 18th and 49th Regiments.

The weather was extremely sultry during the whole of the 25th, and about midday of the 26th rain fell in torrents, a circumstance which tended greatly to the fatigue of the attacking columns. By the night of the 26th, through the strenuous exertions of the artillery, 15 pieces were in position along the chain of heights which commanded the city on the north-east face, and a plentiful supply of shot and shell, &c., collected. The country intervening between the British position and the landing place was broken and difficult for artillery, much cut up by swampy paddy fields, and covered with knolls used by the Chinese as burial-grounds.

The plan of attack determined upon was for one column to enter the city by escalade near the Five-storeyed Pagoda, whilst the other made a détour and effected an entrance by blowing in the north gate; the two were then to unite in a general advance against Magazine hill, a commanding eminence to the south of the Five-storeyed Pagoda.

The right column consisted of the 26th Cameronians (300 strong), and a few Madras Artillery and Sappers.

The *Nemesis* carried, or towed, the whole of the left column.

Whilst our troops were thus engaged, the *Calliope*, *Conway*, *Herald*, and *Alligator* pushed up the Whampoa passage with the flood-tide to secure the naval arsenal opposite the city, and to act as circumstances directed.

At the same time the *Hyacinth*, *Modeste*, *Cruiser*, and *Columbine*, took up a position near the factories and secured the Dutch and French forts.

These ships gained possession of the whole of the river frontage of Canton, capturing many forts and war-junks in a gallant style.

With the city thus at our mercy an armistice was again agreed to, and the necessary humiliation of the city remained incomplete. A ransom of six millions of dollars was accepted, the Tatar troops being allowed to march out without banners or music.

The considerations that influenced Captain Elliot in acceding to an armistice were:—

- (1). The strength of the force under arms before Canton on the 27th May did not exceed 2,200 men, whilst within the city were not less than 20,000.
- (2). Sickness from the inclemency of the weather at this season of the year, the temptations of plunder, and the likelihood of the troops obtaining intoxicating liquors, &c., were greatly to be feared.
- (3). The sacking and firing of the city by a vindictive and rancorous populace were to be dreaded.

After the lapse of five days, the ransom being paid, the troops were re-embarked, and the whole force, including the North Wantong garrison, conveyed to the general rendezvous.

Before, however, the British troops had evacuated their position on the heights, and after the conclusion of the armistice, it became necessary, on the 30th of May, to act against armed bands of villagers, who assembled in large numbers upon a range of low hills to the westward of the city. During these operations the heat of the forenoon led to several cases of sunstroke, and the heavy rain of the afternoon caused the flint-locks of the sepoy to become useless, in consequence of which, and the forwardness of the enraged villagers, many of them were cut down.

These "*patriots*" were induced to disperse by the Prefect of Canton, but, not having learned to dread our arms, they did so under the belief that they were betrayed by their own authorities, and that they themselves could have driven the British from their positions, and were, in consequence, ready to unite again against us whenever occasion offered, with some chance of success. The opportunity presented itself soon after the conclusion of the treaty of Nanking, they being unable to reconcile themselves to the advantageous terms that had been exacted. The aid of the mob, which the authorities at this time courted, they were later on themselves unable to restrain, and their excesses caused Canton to be again visited by an armed force in 1847, and more remotely laid the seeds of future rebellion.

The total loss of the British during this series of operations in killed, wounded, and missing, fell short of 130 (15 killed).

On the return of the force to Hong-Kong, Sir Le F. Senhouse died of fever. At this period Captain Elliot was recalled, his treaty disapproved, and Colonel Sir H. Pottinger appointed in his place.

Rear-Admiral Sir W. Parker was appointed to the command of the expedition about to proceed to the north.

The season of midsummer is always the most trying in the southern latitudes of China, and was rendered more fatal to the health of the men from the exposure through which they had passed during the latter part of May before Canton. Sickiness seriously delayed the preparations for the advance upon Amoy and Chusan; of the small force, 11 per cent. being on the sick list. The occurrence of two severe typhoons, towards the end of July, also caused such extensive damage to the transports that it was found impossible to move the force, as proposed, early in August.

The 55th Regiment, mustering 900 bayonets, joined the Hong-Kong garrison from Calcutta.

On the 3rd August Sir W. Parker and Sir H. Pottinger arrived. The first act of the latter was to refuse to negotiate with his inferior in rank, the Prefect of Canton—a circumstance which exalted his rank greatly in Chinese eyes.

On the 20th August the *Wellesley*, *Blenheim*, *Druid*, *Blonde*, *Modeste*, *Pylades*, *Columbine*, *Cruiser*, and *Algerine*, *Seaostris* and *Queen* steam frigates, and *Nemesis* and *Phlegethon* iron steamers, with 21 transports, sailed northwards. The transports conveyed the 18th Royal Irish, four companies of the 26th Cameronians, the 49th and 55th Regiments, detachments of the Royal and Madras Artillery, two companies of Madras Sappers and

Miners, a rifle company of the 36th Regiment, Madras Native Infantry, —in all 2,700 fighting men, with a numerous train of light field artillery and a rocket brigade.

The general *rendezvous* was to be Chapel island, near Amoy.

The truce at Canton was respected by the British, but the merchants were warned that circumstances might lead to an instant renewal of hostilities, a contingency which the plenipotentiary considered "not only highly probable, from the well-understood perfidy and bad faith of the provincial officers themselves, but also because they might be compelled at any moment, by orders from the Imperial Cabinet, to set aside and disavow their own acts." His Imperial Majesty had, in reply to the memorial of Yih-shan, directed that, in spite of the terms of the truce, *secret* means of defence should be prepared as soon as the ships had left Canton. During hostilities in the north, about to take place, no blockade was laid on the port of Canton, and thus, whilst every effort was made to annihilate the resources of the Empire, exorbitant dues were permitted to be poured into the treasury of this, its principal port.

The garrison left at Hong-Kong, under the command of Colonel Burrell consisted of 5 companies of the 26th Regiment, a detachment of the 18th, 2 companies of Bengal Volunteers, the shattered remains of the 37th Madras Native Infantry and a few Madras Artillery and Sappers and Miners. A fort was constructed on Kellett's island to overawe Kowloon, and other defensive measures taken.

The fleet anchored off Amoy after a favourable passage on the 24th August. Some strong and well-designed batteries had been constructed on the island of Ku-lang-su, mounting some 76 guns, and also along the shore contiguous to the island of Amoy. The two seventy-fours were laid alongside the great shore batteries, whilst the *Druid*, *Blonde*, and light-draft vessels engaged the batteries on Ku-lang-su, and the steamers were employed in landing the troops and destroying the war junks and gun-boat flotilla.

The bombardment lasted two hours, the batteries suffering but slight damage, not a gun being dismounted; in addition to the solid mass of masonry of which the parapets were formed, a sod revetment had been constructed between the embrasures along the outer face.

The troops landed and carried the works, the Chinese making but a trifling resistance. The heat during the day was very great and fatiguing. Our men bivouacked on some heights near the city of Amoy, but as the Chinese evacuated the place during the night, it was entered next morning without opposition.

The troops operating against Amoy were :—

					Officers.	Men.
Artillery	...	...	...	...	9	240
18th Regiment	...	...	...	...	30	648
26th "	...	...	...	...	8	153
49th "	...	...	...	...	24	460
55th "	...	...	...	...	26	731
Madras Sappers	...	...	...	...	6	184
TOTAL				...	103	2,416

The ships were the *Wellesley*, 74; *Blenheim*, 74; *Blonde*, 44; *Druid*, 44; *Modeste*, 18; *Cruiser*, 18; *Pylades*, 18; *Columbine*, 16; *Bentinck*, 10; *Algerine*, 10; *Sesostris*, 4; *Phlegethon*, 4; *Nemesis*, 4; *Queen*, 4:—the four last-named were steamers.

A garrison, consisting of the 4 companies of the Cameronians, the left wing of the 18th Regiment, with a detachment of artillery and Sappers, was left in the island of Ku-lang-su, to overawe the fort and town of Amoy.

The *Druid*, *Pylades*, and *Algerine* remained to blockade the port and protect Ku-lang-su from attacks by water.

No fewer than 500 cannon were taken, together with large stores of ammunition, saltpetre, sulphur, &c.

An attempt was made to destroy the various works of defence.

On the 4th September, the fleet sailed for the Chusan archipelago; owing to baffling winds and thick fogs many of the transports separated and did not re-unite near Chusan till the close of the month. The successive points of *rendezvous* appointed were Buffalo's Nose, Keeto Point and Ting-hai, the capital of Chusan. During the passage the *Nemesis* visited the harbour of Sheipoo, destroying its forts and many war-junks lying there for shelter.

The fortifications that had been raised by the Chinese at Ting-hai, since its evacuation by the British, along the eastern shore of the island, the sea-front and Joss House hill, &c., were of a formidable nature, save that, according to their usual custom, the embrasures had no splay and allowed of a range of fire of about 10° only. The Chinese had, moreover,

entirely overlooked the necessity of protecting their flanks from being turned, and of covering every landing-place on which troops might be disembarked, with the power to descend upon their line in a direction which would render the fire of their prodigious artillery and batteries entirely futile. The hill to the right of the valley, the key of the enemy's position, was accessible and unoccupied except by troops. This point was selected for the attack, whilst the howitzer battery (one 68-pounder gun and two 24-pounder howitzers) constructed on Trumball island, on the eastern side of the inner harbour, within good range, occupied the attention of the batteries.

On the 1st October, the 55th, 49th, 26th, and 18th Regiments, with the rifles (Madras Native Infantry), artillery, and Sappers, disembarked under the brow of the hill above-mentioned, and which the enemy had occupied in considerable force and attacked it.

Several of the men-of-war brought their guns to bear on the right flank of the long battery mounting 150 to 200 guns, which stretched across the mouth of the valley.

The 55th carried the heights in front of them, suffering some loss in their ascent up the slope of the hill, the enemy abandoning everything and flying across the low ground which separated their position from the city.

The force was now divided, the 18th Regiment being directed to advance against the long battery and Joss House hill, the remainder to pursue the flying foe and effect an entrance into the city. This latter column suffered no check, the walls being escalated without loss, the rapidity of the advance not permitting the Chinese to recover from their

panic. On the right, the 18th Regiment and Royal Marines had some sharp encounters with the enemy, who rallied from time to time, and they suffered some loss before the Joss House hill was gained.

The loss of the Chinese was considerable,—several Mandarins were killed or died from wounds inflicted by their own hands, in despair of regaining the favour of their Emperor.

The loss on the British side was trivial (2 killed, 19 wounded).

The Chinese army melted away after their route in a manner as complete as it was imperceptible, for the Chinese soldier has only to throw off his blue cotton blouse and overalls to become undistinguishable from a peasant or artisan except to the practised eye.

Large supplies of iron shot, musket balls, powder, &c., fell into the hands of the victors.

The inhabitants of the island proved a hardy and independent race, and up to the end of the war it was dangerous for the garrison to leave the town. Several camp followers and private soldiers were kidnapped, men being sent over from the mainland expressly for this purpose. The kidnapping of a Chinese commodore, who had been active in provisioning the troops, produced the worst results, and the garrison, in consequence, suffered from bad food and insufficient diet.

Leaving detachments of the 18th and 55th, artillery and Sappers, to garrison Joss House hill and Ting-hai, the combined force, on the 9th October, anchored of Just-in-the-way rock, a rock in the mid-channel of the entrance to the Ningpo river.

A reconnaissance showed the heights on either side of the river to be crowded with troops, and bristling with batteries and intrenchments, while the entrance to the river was impeded by a double row of piles, extending nearly the whole way across its mouth and defended by a row of war-junks. The citadel, which occupied the summit of a sharp and craggy hill to the right of the river's mouth, had been strengthened, and at every bay or point where facility of landing was afforded, strong earth-works had been thrown up.

Early on the morning of the 10th October, a strong column (left column of attack) of infantry and artillery was landed upon a sandy beach on the southern side of the river, far to the eastward of the Chinese position, and made a circuit round the base of the hill on which the main body of the enemy were posted, so as to get well in their rear, whilst their attention was diverted by the attack of another column (centre column) which was landed near the mouth of the river, and by the fire of the men-of-war and steamers, which were anchored as close inshore as the shoaling of the water would allow, in order to demolish the defences of the citadel, and to throw shells into the batteries and intrenchments on the heights.

A small detachment of Sappers and Miners having been attached to Sir W. Parker's column, to the naval portion of the force was assigned the duty of carrying all the enemy's works on the left, or west bank of the river. This force consisted of the seamen battalion, 400 men; Royal Marines, 276 men; Royal Artillery, 23 men; Madras Sappers, 30 men; with two 5½-inch mortars, and some 9 and 12-pounder rockets.

After an effective cannonade of the citadel, a portion of this latter force was landed, who, scaling the rocky height, entered by a gateway already partially ruined, and gained the position, from which the Chinese fled as they approached. The city ramparts were then escaladed, and the city occupied without resistance.

On the right bank of the river the centre column, consisting of the 49th Regiment, detachments of artillery and Sappers, two 12-pounder howitzers and two 9-pounder field guns,—in all 440 men and shot-carriers,—landed near the mouth of the river, and drove before it the Chinese, who retired towards a bridge of boats thrown across the river up-stream. The left column, (5 companies of 55th Regiment, a wing of the 18th, a company of Madras Artillery, and some Sappers,—in all 1,040 men,—with 4 light howitzers, two 5½-inch mortars and 100 shot-carriers,) having overcome all opposition, debouched upon the banks of the river in time to effectually intercept the retreat of this dense mass of the enemy, who, overwhelmed by the fire of a complete semicircle of musketry, lost heavily and rushed for safety by hundreds into the water.

Many prisoners were captured, as well as a large amount of military stores, together with many brass cannon, junks, and armed boats. The prisoners were liberated, deprived of their arms, and many of them of their tails; the latter degradation must be considered a wanton outrage on Chinese feeling, and one likely to have intensified their feeling of exasperation against invaders.

The British loss was small (3 killed and 16 wounded). A garrison, consisting of the 55th Regiment and detachments of artillery and Sappers, was left at Chin-hai, with the *Blonde* in support, to hold the fortifications there; and on the 13th

October the steamers, with the *Modeste*, *Cruiser*, *Bentinck*, and *Columbine*, as a light squadron, advanced up the river towards Ningpo, a passage having been first opened through the barrier of piles and bridge of boats. The land force on board consisted of some 750 bayonets, besides artillery and Sappers.

The lesson taught the Chinese on the 10th had been too severe to allow of a rally at so early a period, and the city was found deserted. Every precaution was taken to prevent plunder; vast stores of rice and other grain were captured. The ponies taken were found most useful in mounting the staff of the General, as draught animals, and for the transport of ammunition boxes and the other necessary appendages of a field train hitherto chiefly carried by "shot-carriers."

Had the troops been able to advance on Chapu, and by its means on to Hang-chow-fu, the provincial capital of Chê-kiang, it is not improbable that the campaign might have been brought to an end; they were, however, not in sufficient numbers to do so.

The Emperor seems not to have been dismayed by the disasters which his troops had met with, but to have felt great alarm for the safety of Hang-chow, and the line of the Peiho, and so he detained some of the troops intended for the defence of the former place at Tient-sin.

No further hostilities being contemplated, the troops at Ningpo employed themselves in constructing fireplaces in their barracks, improving the windows, planking the

Billets.

floors, and adopting all the measures of precaution required to meet cold and foul weather. Some Joss houses and Mandarins' quarters near the north-western angle of the ramparts were taken possession of as a cantonment. The troops at Ting-hai and Chie-hai found comfortable billets in public buildings, Joss-houses, &c. A serviceable fire-grate was rapidly constructed by means of a few bricks and half-a-dozen old Chinese matchlocks.

An excellent market was established, where white bread, beef, kids' flesh, fish, and vegetables, were to be bought in abundance.

The *Nemesis*, and other light-draft steamers, were found to be most useful in keeping up communication between Chusan and Ningpo, in beating up the quarters of war junks, searching for fire-rafts, dispersing troops, reconnoitring the islands and rivers, and in rapidly conveying troops from point to point. By their means operations were carried out against Yuyao, on the north-west branch of the Ningpo river and Tsie-kie, as well as Fung-wah, the result of which were most salutary, creating alarm and enabling the British to show good feeling and forbearance to the people when in their power and abandoned by their own authorities.

During the progress of these successful operations in the north, towards the end of September, it became necessary to destroy the fortifications of North Wantong in consequence of the Hong-Kong force being too weak to detach 200 men to hold them and the Chinese, in infraction of the treaty of May, making preparations to form barriers across the two principal channels of the river—the Macao and Junk river passages.

At points along the river, where the intentions of Chinese were warlike, store junks were sunk, and houses to which stakes were fixed, burnt. Notwithstanding these precautions, the squadron being withdrawn, by the end of November, both the above-mentioned channels were staked and batteries commenced in various places along their banks.

The merchants still remained at their factories on their own responsibility, and carried on such trade as still flowed in the accustomed channels. Smuggling was carried on to an unparalleled extent, Yih-shan himself being implicated in the contraband trade.

Under orders from England, the blockade of Canton was from October prosecuted with increased vigour.

At the close of 1841, peace seemed far distant, and the confident and determined tone of the Emperor's edicts, combined with an absence of all indications of anxiety to treat with the invaders on any terms, seemed to offer the prospect of a protracted and unsatisfactory warfare, in which neither honour nor military experience were offered as a reward to those whose health and energies must be expended in its prosecution.

HOSTILITIES 1842. *

Operations in the vicinity of Hang-chow Bay, &c.

The inhabitants of Ningpo showed a friendly disposition towards the troops stationed there, supplying them with abundance of fresh provisions. The winter proved to be a severe one, snow lying thickly on the

Garrisons at Ningpo,
Chin-hai, and Amoy.

* Ouchterlony.

ground in and around the city, and all water being more or less frozen over. Under the influence of this invigorating temperature, roomy and well-warmed quarters, and with the advantage of a commodious parade ground, the health of the troops, including a detachment of Madras Sappers, and the rifle company of the 36th Madras Native Infantry, improved greatly.

At Chin-hai everything remained quiet, and the inhabitants returned to their occupations of fishing, weaving, and agriculture; the 55th Regiment there was well supplied with provisions and occupied excellent quarters. The ships of war and transports remained at the anchorage near Just-in-the-way rock, and in the commodious bay, or inner anchorage at Ting-hai.

At Amoy the garrison consisted of 2 companies of the 18th Regiment and detachments of Artillery and Sappers, aided by a frigate and two small vessels of war.

Chinese pirates ravaged the coast cities of the Fukien province until some terrible examples were made of the crews of pirate junks captured by the boats of the squadron.

The garrison in the island of Hong-Kong, early in 1842, consisted of the 26th Cameronians, the 37th Regiment Hong-Kong. Madras Native Infantry, 2 companies Bengal

Volunteers, and detachments of the 18th and 49th Regiments, Artillery and Madras Sappers and Miners. The Indian troops were accommodated in temporary barracks on shore, the European regiments remaining in their transport ships. Early in the year, the Cameronians proceeded to join the head-quarters of the army; extensive barracks were erected for the troops, a commissariat and naval store, hospital, ordnance dépôt, naval yard, &c., were established; wharfs, piers, roads, &c., were constructed. The 37th Madras Native Infantry, which had suffered so severely in numerical strength through shipwreck, fever and dysentery, was sent back to India.

The raw recruits landed at this time from England caused the discipline of the force to suffer and the place to be given a name for insalubrity which it did not deserve, the mortality being due to the excessive drinking of *sam-shu* (a strong cheap spirit), exposure to the mid-day sun, and immoderate indulgence in sea-bathing.*

The Chinese, in the meantime, from experience gained in May, 1841, had constructed formidable works of defence, blocking all the main river approaches to Canton, the Macao passage, &c., and also near the two creeks called Junk river and Fiddler's Reach, showing a skill in their construction and in the selection of their sites much in advance of former years. Dams, formed of huge crates or cradles of stout timber, firmly bound with iron, floated into position, and then weighted and sunk in lines,

* The mortality amongst the troops was later on (1855-56) due primarily to the upturning of the soil, a decomposed granite, and to the removal of the Indian troops which "resulted in increased exposure of the British troops to the heat of the sun by day, and the effects of malaria by night, and to the overcrowding of the barracks and deficiency of proper sanitary accommodation for the additional number of European troops required for the performance of the duties of the garrison." (Official Report, July 1856).

were constructed across all navigable branches of the main river. By removing the packing of these crates the navigation of the river could be readily restored.

The Portuguese from Macao carried on a lucrative and extensive traffic in cannon, small-arms, and ammunition with Canton,—some 500 to 600 pieces of cannon passing up the Broadway in spite of all the efforts of the boats of our men-of-war to intercept the junks in which they were transported, as soon as they emerged from the Portuguese inner harbour.

During the winter, at Ningpo, Chusan, and the other towns occupied, the Chinese still carried on, in a most daring manner, a system of kidnapping, which was not lessened until summary executions had taken place. The practice of kidnapping and that of drifting fire-rafts against our shipping were favourite practices of the Chinese.

On the early morning of the 10th March, columns of Chinese troops, of dense array and prodigious length, headed by men of gallantry and determination, poured down upon the gates of Ningpo, held by small detachments of troops only, chiefly attacking the west and south gates. At the same time the gates were attacked from within. The west gate defences were strong and in good order, and all efforts to force them proved ineffectual. The enemy were successful at the south gate, where the guard-house was situated below, instead of on the parapet, and where the Chinese, entering by the water gate, were joined by troops who had to all appearance been concealed in the houses during the day previous. The guard retreated unmolested along the exposed *terre plein* of the rampart to the bridge gate. The victorious Chinese penetrated to the market place, where they were encountered as they emerged from a narrow street by a company of the 49th Regiment, whose fire, at pistol-shot distance, was so effective as to cause them to retreat and retire beyond the south gate, which was again occupied.

Warnings of these attacks and projected attacks were given by the Chinese closing their shops and leaving the city, and occasionally by more direct information. Many of the enemy escaped by throwing away their arms and mingling with the crowd.

Previous to the attack on the gates, about midnight, some guns were brought to bear from the wharf against the *Modeste*, *Columbine*, *Queen* and *Sesostris*, and several fire-rafts were launched ineffectually against them. In the vicinity of Ningpo large numbers of fire-rafts had been prepared in both branches of the river—a fact which does not speak well for our precautions taken to ward off danger, our means of discovering them being nevertheless ample.

A sortie from the west gate, aided by an artillery detachment working a howitzer, caused immense slaughter amongst the Chinese troops occupying in dense masses the narrow streets and alleys of the suburbs. On our side not a single man was killed, the enemy losing upwards of 400;—their bravest and best troops.

The promptness with which the guards at the gates were reinforced, and the judgment displayed in destroying by a sortie the west column, may be quoted as models to be imitated on like occasions.

The merciless carnage in the west suburb prevented the enemy from renewing the attack. The attack was bold, both in plan and execution; those who undertook it had never previously witnessed the destructive effects of musketry and grape-shot. Amongst them was a large body of half-savage mountaineers from the Maou-tse country. It is an ascertained fact that on no occasion during the war was a division of the enemy's troops, which had been defeated with slaughter, a second time arrayed against us.

Simultaneously with the above attack an attempt was made to surprise the gates of Chin-hai, but without success. *Attack on Chin-hai.* Fire-vessels were also there sent adrift against the shipping, but were driven on shore by the boats of the *Blonde* and *Hyacinth*.

At this time the enemy collected in considerable numbers on Tai-shan island, one of the Chusan group to the north-east of *Tai-shan and Ting-hai.* Ting-hai, but were dispersed by the *Nemesis*. An attempt was also made to burn the shipping in the outer and inner harbours of Ting-hai by fire-rafts prepared at Sinkong and Sun-ka-mun, on the shores of Chusan, 12 to 13 miles distant from Ting-hai.

Disappointed in cooping up the enemy on Tai-shan, Sir W. Parker arrived in the river of Ningpo on the 14th March with the *Queen*, *Nemesis*, and *Phlegethon*. Three hundred and fifty seamen and marines from the *Blonde*, *Cornwallis*, *Modeste*, and *Columbine*, united with the force withdrawn from Ningpo, formed a detachment of 900 men of all arms, with 4 light field pieces (8-pounders), available for operations against Tsie-kee, where the enemy were reported to be in force.

On the morning of the 15th, the whole embarked on board the *Queen*, *Nemesis*, and *Phlegethon*, steamers, and proceeding *Tsie-kee.* up the river in a north-east direction, disembarked 4 miles from Tsie-kee, and pushed forward towards a high range of hills, on whose summit they discerned innumerable white tents, and where a position had been taken up, forming a sort of amphitheatre, encompassing the city on all three sides, but commanded on the left by heights, from whence its centre and right, held in the greatest force, could be enfiladed.

The artillery, for which ponies had been trained, marched from Ningpo by land, swimming their horses across the river. The troops traversing the city, which was unoccupied, entered the plain enclosed between the ramparts and the heights of Segaoon, and in three columns ascended the heights,—the right column, consisting of the 18th Regiment and rifle company, 36th Madras Native Infantry, making towards the heights commanding the left of the enemy's position, in a direction to cut off the retreat of the enemy.

The 49th Regiment in the centre, and the seamen and marines on the left, speedily gained the summit of the heights, and at the point of the bayonet drove the enemy out of their intrenchments, following them in pursuit down the reverse slope.

The right column, on gaining the crest of the heights, finding no enemy to oppose them, moved across the fields towards the Chang-ki pass.

The 26th Regiment acted as a general reserve. The loss of the British was trifling (3 killed, 15 wounded). Amongst the casualties the proportion of officers was large (4 wounded). The loss of the Chinese exceeded 500 killed and wounded. The British bivouacked on the heights of Segao.

The enemy's force was estimated at between 7,000 and 8,000; it was composed chiefly of northern men of greater sinew and muscular power, more hardy and warlike than the ordinary troops of the Central and Maritime provinces, and who had never previously encountered British troops. Considerable individual bravery was shown. The Chinese, with one or two trifling exceptions, never made use of field artillery, and did not regard it as a necessary part of a regular army. A vast number of gingalls, matchlocks, small-arms and ammunition, together with stores of flour, grain, salt, and other commissariat supplies, were taken.

On the 16th March, the wounded were embarked on board the steamers, the camp fired, and the troops advanced towards the Chang-ki pass, distant 6 or 7 miles from Tsie-kee, but were too late to capture the military chest and main magazine of the Che-kiang army, which the Chinese effectually carried off. On the 17th, the force returned to their base, a party traversing the land route to Chin-hai, which, by the branches of the canal, was found practicable.

The troops at this time were in a state of the utmost efficiency, due to the bracing influence of the winter which they had passed through, and an enforced abstinence from *sam-shu*, which had proved so fatal to the men of the Expedition of 1840.

Early in 1841, the 26th Regiment and the *Cornwallis* joined the force.

Reinforcements. During April and May a fresh corps of Bengal Volunteers (Rajpoots), the 2nd and 41st Regiments Madras Native Infantry, with some artillery and horses, reinforced it, — several steamers and ships of war, *i.e.*, the *Vixen*, *Tenasserim*, *Auckland*, *Ariadne*, *Medusa*, and others from Bombay and Calcutta (Hooghly steamers), well armed and adapted for river navigation, also joined.

During the Yangtse operations the Rajpoots, whose caste prejudices prevented them cooking except on shore, suffered many privations. They landed at Nanking 750 strong, having arrived 900 strong. On return to Calcutta early in 1843, they did not muster 400 men.

Difficulties of tides and currents, supply and transport, had prevented operations being carried out against the important and strongly garrisoned town of Hang-chow-fu; it was, therefore, determined that the town of Cha-pu, 30 to 35 miles distant from it, should be now attacked. The transports occupied nine days in reaching Cha-pu from Chin-hai, a distance of 60 miles only.

Ningpo was evacuated on the 7th May, and the troops embarked on board the *Queen*, *Sesostris*, and *Phlegethon*, steamers. This was represented to the Emperor as a great victory gained.

Evacuation of Ningpo.

The Tartar garrison of Cha-pu, contrary to custom, quitted their quarters in the north-western angle of the city,

Cha-pu.

and intrenched themselves on the hills commanding the shore where it was likely that the British force would be landed, undismayed by the fatal warning given at Chin-hai and Tsie-kee. The works—stone fort and batteries defending the harbour adjoining the eastern suburb of the city—were not occupied, and battle was offered in the open, where discipline gave to the British a fearful advantage.

On the 18th May, the anchorage and landing-place having been previously surveyed, the troops landed, and, supported by seamen and marines, formed in two columns; the right, consisting of the 26th and 55th Regiments, with the artillery and rifles, to turn the left of the enemy's position, parallel to the shore, to advance by its rear towards the town; the left, consisting of the 18th and 49th Regiments, to advance up the heights, to take the Chinese intrenchments in flank, and to drive their defenders into the plain towards the right column. The steamers co-operated by shelling the position.

About one in ten of the Chinese were armed with a firearm, the rest having only spears, swords, bows and arrows. The danger of setting their clothes on fire by the match, or by the ignition of the powder, made them afraid of arming themselves with the matchlock.

The Chinese made no effectual resistance, but, abandoning their positions, fled in confusion. The right column of attack, gaining Cha-pu, escalated the walls at the north-east angle and occupied the ramparts, leaving to their rear a band of 800 Tatar troops in occupation of a Joss-house, who, finding their retreat cut off, offered a desperate resistance to the left column and the naval brigade, which had landed on the rocky point facing the harbour battery.

To reduce the building, it became necessary to bring up artillery and blow in the outer walls by powder, and eventually to fire the building (roof timbers are generally of an inflammable pine.)

Some four hours were expended in reducing this building, many of its gallant defenders perishing in the flames.

This display of indomitable valour on the part of the Tatar troops exalted them in no slight degree in the estimation of the British. On entering the Tatar city, the

Tatar bravery.

greater number of its residents, men and women, were found to have destroyed themselves, rather than meet the dreaded foreigner at whose hands they had been taught to expect the most unheard-of atrocities.

The occupation of Cha-pu, the port of Hang-chow-fu, and important as the entrepôt of trade with Japan and Singapore, was but a preliminary to a descent upon Hang-chow-fu itself, the capital of the richest province of the Empire and the head-quarters of its military strength; yet it was decided not to attack it. Junks, unable to navigate the bay of Hang-chow, enter the line of inland navigation leading to Hang-chow-fu and the Grand Canal.

The harbour of Cha-pu is less than 400 yards across, but capable, nevertheless, of affording shelter to a considerable number of junks from the north-east monsoon.

Cha-pu.

The circuit of the walls of the town does not exceed three miles; its form is square, and about one-fourth of the enclosed space is taken up by the Tatar city; the trade, as is usual in Chinese towns, is confined to the suburbs. The Tatar city invariably contains the magazines for arms, powder and grain, as well as the barracks for the garrison, and, perhaps, a small foundry.

Of the British force engaged on the 18th of May, two officers were killed and six wounded; and of non-commissioned officers, rank and file of all arms, eight were killed and 44 wounded. The enemy left some 500 or 600 men dead, or to die, on the field. The Chinese wounded were well treated, and the kindness they received at Cha-pu produced important results in inducing their countrymen to treat our prisoners with a like clemency, and caused the veteran Elepoo, now restored to favour, to pen the Admiral and General a letter of thanks. The capture of Cha-pu also caused the people to wonder at our forbearance and dread our power.

Overtures now made by irresponsible Mandarins to suspend hostilities met with no response. On the 28th May the troops re-embarked, leaving the Chinese mob to finish the work of plunder that they had commenced on the retreat of the town authorities. After a voyage of fifteen days the transports and fleet anchored off Wu-sung, about 100 miles distant from Cha-pu.

** Operations on the Wu-sung and Yang-tse-kiang Rivers, 1842.*

Shanghai, on account of the importance of its trade, was the first point north of Hang-chow bay selected to be attacked. **Attack on Wu-sung and occupation of Shanghai.** On the 15th June, the surveying boats, without molestation buoyed off a line of anchorage in front of the long battery covering the approach into the Wu-sung river. The defences consisted simply of a line of ramparts, pierced with embrasures, and extending along the river-bank towards Paon-shan. Not a single flanking defence had been constructed. At Paon-shan was a small fort. The town is walled and was armed with some 50 cannon. On the opposite bank stood an old fort of masonry and a line of earthen batteries; these works were, however, incomplete, and but few of their guns (21) bore with effect on the attacking squadron. Had the Chinese guns been of a better nature, most of the vessels of the squadron must have been dismasted whilst coming to an anchor.† One hundred and seventy-five guns were mounted for the defence of Wu-sung. After a short bombardment the works fell to a few boats' crews and marines. Our loss amounted to 2 killed and 20 wounded, the enemy losing some 30 only. About 200 pieces of cannon were taken, the greater part of small calibre, about one-half being 6-pounders and under. The largest were 24-pounders, and there were a good many of from 10 to 18-pounders.

The vessels engaged at Wu-sung, June 16th, 1842, were:—

Her Majesty's Ships *Cornwallis*, 74; *Blonde*, 44; *North Star*, 26; *Modeste*, 18; *Columbine*, 16; *Olio*, 16; *Algerine*, 10.

* Guchterlony.

† The men-of-war had to be towed into position by the steamers.

Honourable East Indian Company's Steamer *Sceostris*, *Nemesis*, *Phlegethon*, *Pluto*, *Tenasserim* and *Medusa*.

On the 16th June, the force was strengthened by the arrival of the *Dido*, 20 guns, convoying a large division of transports containing 2,500 men of the reinforcements from India.

No resistance being expected at Shanghai, only the second Regiment of Madras Native Infantry and detachments of Sappers and Miners, and Artillery were landed. The land force consisting of 1,000 men, including the 18th and 49th Regiments, with detachments of the Royal Artillery, Madras Horse Artillery and Sappers and Miners, marched along the left bank of the river without encountering any obstacles from narrow roads and intersecting streams that the Sappers were not speedily able to overcome. The villagers along the line of advance aided by carrying the scaling ladders and manning the drag ropes; if not willingly, still, without dissent. The men-of-war—i.e., the *North Star*, *Modeste*, *Clio*, and *Columbine*—each in tow of a steamer with the rest of the troops embarked—proceeded up the river to Shanghai without accident, encountering river batteries about mid-way and at a point just below the town, where the river makes a sharp bend to the left. The latter battery, placed almost a *fleur d'eau*, raked every ship, fore and aft, as she advanced, and, had it been well served, must have caused terrible slaughter amongst the troops crowded in the steamers like sheep in a pen. A few broadsides from the fleet sufficed to put the gunners to flight.

The land force almost without molestation occupied the town, and at Occupation of Shan- once took measures to preserve it from mob violence, ghai. by constantly patrolling the streets in all directions. A vast number of large trading junks were found anchored off the town, pointing to it as a place of great commercial importance. A quantity of guns, arms, and military stores were found in the arsenal within the city. The number of guns captured at Wu-sung and Shanghai amounted to 360 pieces.

On the 20th, the *Nemesis* endeavoured to reach Soo-chow, but failed from want of information as to its position, returning when upon the point of entering the canal leading to it.

The heat of Shanghai was found both oppressive and enervating.

The troops occupied, within the city, various handsome and spacious Billets. halls, and pagodas, built round a piece of water, and commodious private dwelling-houses, which, having usually many squares included in their range, and the whole walled in by a high brick enclosure, with usually but two doors, are well adapted for defensive quarters.

On the 23rd June, Shanghai was evacuated, one division embarking on board the steamers in the river, the other marching by land with the guns to Wu-sung. After the departure of troops the town was sacked by the Chinese mob.

The force now collected at Wu-sung numbered 9,000 bayonets, exclusive of marines. Of the Indian reinforcements, the 39th Madras Native Infantry remained in garrison at Hong-Kong, and the 41st at Chusan.

The apprehension of our advances on Peking by way of the River Peiho was now so great that Chinese troops destined for Soo-chow-fu were directed to repair to Tien-tsin.

The whole of the land force, under Sir H. Gough, was divided into three brigades; *the first*, under Lord Saltoun, C.B., consisted of the 26th Cameronian Regiment, the 90th Regiment, the battalion of Bengal Volunteers, and the flank companies of the 41st Madras Native Infantry,—total 83 officers, 2,235 other ranks; *the second*, of the 55th Regiment, the 36th Madras Rifles, with the 2nd and 6th Regiments, Madras Native Infantry,—total 60 officers, 1,772 other ranks; and *the third*, of the 18th and 49th Regiments and the 14th Madras Native Infantry,—total 68 officers, 2,087 other ranks. The Royal and Madras Artillery formed a *separate brigade*, which was composed of one troop of Horse, and 4½ companies of Foot Artillery—total 32 officers, 318 Europeans and 252 natives, and 4 companies of gun lascars, natives of Madras entertained to assist in dragging the pieces where horses could not be employed, and to carry ammunition (*shot-carriers*), &c., services in carrying out which their aid was invaluable. The Engineer department and three companies of Madras Sappers formed a *distinct command*. To each brigade, when moving against the enemy, a detachment of artillery and Sappers was attached. The fleet consisted of:—

H. M. Ships *Cornwallis*, *Blonde*, *Calliope*, *North Star*, *Dido*, *Modeste*, *Endymion*, *Clio*, *Columbine* and *Algerine*—men-of-war.

„ *Belle Isle*, *Apollo*, *Sapphire*, *Jupiter*, and *Rattlesnake*—armed troopships.

„ *Plover* and *Starling*—armed surveying vessels.

„ *Vixen* and the E. I. Co.'s *Sesostris*, *Auckland*, *Queen*, and *Tenasserim*—steam frigates.

E. I. Co.'s *Nemesis*, *Phlegethon*, *Pluto*, *Proserpine*, and the *Medusa*—iron steamers.

and fully 40 transports,—the entire burthen of which was not less than 3,000 tons. The transports were formed into five divisions, each conveyed by a man-of-war, and to each division a steamer was attached to render assistance. Surveying ships preceded the convoy and signalled dangers and soundings. The fleet weighed anchor on the 6th July, and on the 19th, after experiencing but slight resistance, although points favourable to defence were numerous, reached Chin-kiang-fu.

The great expectations entertained that the Chinese would here make a most desperate resistance were disappointed, for the fleet was allowed to ride quietly at anchor within short range of the city ramparts; the place appeared to have been entirely deserted. As is usual in Chinese commercial towns, no extensive wharfs and landing-places or store-houses of any size existed.

The total British force at this time consisted of not fewer than 12,000 fighting men, of whom upwards of 9,000 (including Marines) were troops in the highest state of efficiency, armed for the most part with percussion muskets and supplied with artillery and *matériel* perfect in all its departments. The Naval Brigade consisted of 15 vessels of war, 5 steam frigates, and 5 light-draft iron

steamers, on board of which were 8,000 seamen, two-thirds of whom were available for employment on shore.

The Chinese appear to have defended the lines to the Capital and Shanghai only, and to have entirely neglected that of the Yang-tse—a neglect which indicated the exceeding weakness under which their Government laboured, and the insignificance of their military resources, for, during a period of forty days, two paltry and unsupported batteries only had been erected between Wu-sung and Chin-kiang-fu, on the banks of a river which afforded many admirable positions, each of which could only have been carried by the disembarkation of troops.

On the 21st July, orders were issued for the whole of the land force

Attack on Chian-kiang-fu. To be disembarked at daybreak. Major-General Schoedde's brigade (2nd) was directed to land to the east of the town, drawing the attention of the enemy to that quarter, whilst Major-General Bartley's column (3rd brigade) landed to the west of it and carried out the direct attack. Lord Saltoun's brigade, destined for the attack of the intrenched camps, occupying a low range of hills to the south, five or six miles distant, also landed to the west of the town, opposite Golden island.

The operation of landing was carried out in a most irregular manner, owing to the strength of tide and the distance apart of the transports; the majority of the troops, however, were on shore by 7 A.M. The landing, notwithstanding its difficulty, was unopposed. The day was intensely hot.

Lord Saltoun's brigade advanced over the undulating country against

Right attack.

the Chinese intrenched position in two columns. the one directed its march to turn the left of the enemy's position, the other so as to press upon their right, whilst two companies of the Bengal Volunteer Regiment took post in some dwelling-houses and gardens to keep in check a division of the enemy's troops which menaced a descent upon the right flank of the advance. The Chinese, after meeting the attack with an irregular and ill-sustained discharge from matchlocks and gingalls, gave way before their retreat could be intercepted and cut off. Thirteen men of the 98th Regiment expired before evening from the effects of fatigue and exposure to the intensity of the sun's rays.

Major-General Schoedde's brigade landed without opposition, whilst

Left attack.

unopposed the 55th Regiment occupied a commanding slope within 300 yards of the walls. The 2nd and 6th Madras Regiments suffered some loss before the cover of the undulations was gained. The *Auckland*, steam frigate, anchoring abreast of the ramparts, opened a well-directed fire against them from her 68-pounders.

Seeing the enemy retreat before Lord Saltoun's column (1st brigade), and hearing heavy firing in the direction of the attack of the 3rd brigade, General Schoedde determined to escalate the city walls—a mode of attack well favoured by the ground. So completely did the fire of the covering party engross the attention of the Chinese that the ladder party suffered no loss, and the scaling party formed on the ramparts unmolested. The 55th and 6th Madras Native Infantry vied with each other

in gallantry in mounting the ladders, together with the Rifles. The progress of the force towards the west gate was, however, hotly opposed, the Tatars fighting with great bravery and taking advantage of the guard-houses on the wall to prolong the encounter, they being difficult to assail at the point of the bayonet, and the narrow ramparts being unfavourable to our musketry fire and favourable to that of the enemy's gingalls loaded with a bagful of bullets. Had they been armed with weapons similar to those of our own troops, even without much discipline, they would have done much execution amongst the latter.

Eventually, the resistance slackened, the Tatars seeking cover amongst the houses and gardens of the town, and dispersing, as afterwards became known, to sacrifice their unfortunate wives and families. So obstinate had been the resistance that, although the ladders were planted against the walls on the eastern side shortly after 8 A.M., the opposite point of the compass—the west gate—was not gained until three hours afterwards.

The 3rd brigade (Bartley's), not having as yet forced an entrance by the west gate, General Schoedde pushed a party along the ramparts into the bastions defending the courtyard between the inner and outer gates. Both gates had been strengthened by barricades of grain and sandbags—a mode of defence which acts both favourably and unfavourably, preventing sallies. Had a sally been possible, four pieces of artillery with its *personnel*, which, conveyed in the boats of the *Blonde*, had taken the line of the Grand Canal towards the west gate and unexpectedly found themselves exposed to a heavy fire, must have been readily captured. The 3rd brigade, upon witnessing the favourable issue of Lord Saltoun's (1st

Centre attack.

Brigade) attack, and on hearing the firing which announced that the attack of the 2nd brigade had commenced in earnest, moved (18th and 49th Regiments) through the suburb towards the west gate, and, occupying the houses lining the canal, brought a heavy fire of musketry, shot, and shell, to bear upon the ramparts manned by the Tatars.

About noon, three powder-bags (containing about 160lbs.) were placed in position against the gates, and a heavy fire being brought to bear upon the defenders of the ramparts, the brigade formed in close column of sections in the streets of the suburbs, in readiness to charge through the gateway. The explosion was successful, and the storming party rushed through the west gate. About the same time a party of Marines, who, by the line of the Grand Canal, had reached the scene of action in the boats of the *Cornwallis*, escalated the wall near a small postern, landing for the purpose close under the right flank of the gateway bastion.

The 2nd and 3rd brigades now took post at the various gates of the town, and proceeded to occupy such quarters as were available for the night.

The Tatars, having stabbed their wives and children, made a final rally in the vicinity of their barracks, and during the night they continued to make desperate rushes upon sentries and guards. Encounters took place even inside houses occupied as billets, and in which Tatars were concealed. This custom of carrying on desultory attacks after the day had been lost was a practice throughout the war.

The heat, as already stated, was most intense and completely prostrated the British troops unaccustomed to it, 16 men and 1 officer dying from the effects of sunstroke. Our loss was 3 officers and 81 of other ranks, killed; 14 officers, 92 other ranks, wounded. Of the Marines, 1 officer and 2 privates were killed; 5 officers and 15 men of the Navy were wounded.

The morning of the 22nd July disclosed a fearful scene of desolation; the mob, even before the tumult of the fight had ceased and its dangers at an end, had commenced their work of destruction and plunder.

The spectacle in the Tatar quarter, the scene of the suicide and murder of the Tatar women and children, has, for loathsome horror, been perhaps unequalled; but yet the knowledge thus afforded of the domestic principles and national antipathies and prejudices of a race so interesting as the Tatars, enables us to estimate their character and capabilities as a people.

Had the Tatars possessed any practical acquaintance with the science of military defence, such indomitable courage on the part of their chief and the devotedness and skill in the use of their arms, of which such numerous proofs were given, must have ensured a different result, and the escalade of the 2nd brigade could scarcely have succeeded had the defenders been aware of the mode of attack adopted, for the ladders attached to the brigade were only three in number, and no preliminary cannonade was carried out to beat down the parapet wall.

The Tatars, moreover, did not avail themselves of their flanking defences, nor had they cleared away the houses giving cover close up to the west gate. In numbers they did not exceed 2,300, all chosen men from the various legions composing the Tatar army. Their commander, General Hai-ling, causing his official papers and a quantity of wood to be piled around him, set fire to the funeral pile and perished in the flames. Such heroism is considered by the Chinese as highly exemplary and worthy to be imitated: a more enlightened people cannot but admire and wonder at such intrepidity, whilst there mingles with these sentiments a feeling of regret that those displaying it should have been so misguided and ruthless.

With the capture of Chin-kiang-fu the great object of the Yangtse-kiang campaign had been accomplished, the Empire severed in two, and the utter incapacity of the government to defend its people exemplified—a knowledge which caused consternation far and wide, and raised the spirits of the turbulent.

Unfortunately the grain tribute had passed up the canal towards Peking; nevertheless, within a few days, 750 trading junks were stopped.

General's Schœdde's brigade was told off to occupy Chin-kiang-fu.

55th Queen's; 2nd
Madras, 6th Madras,
Artillery, Sappers.

battalion occupied
the Grand Canal.

Mounted Infantry.

Two regiments took up a position on the hills overlooking the city, a breach 30 yards wide in the walls being made near their camp to enable troops to be poured into it if necessary. The remaining commodious buildings near the southern mouth of the Grand Canal. Many strong, hardy northern ponies had been found in the cavalry stables of the city, which enabled a half troop of Mounted Infantry to be

formed, who performed many useful duties,—securing the country, collecting supplies, &c.

Before the troops embarked for Nanking, much desultory fighting took place, and, it being found impossible to restrain the mob, Chin-kiang-fu was left more or less a ruin.

The town of Kwa-chow paid a ransom of 500,000 dollars. A market was established close to the landing-place at the mouth of the canal leading up to Kshing. Before the departure of the fleet for Nanking, Ellesoo again treated for peace and endeavoured by promises to delay its movements. As the conditions of peace were already well known, a cessation of hostilities was refused, until, under the seal of the Emperor, authority to conclude a treaty of peace based upon them should be produced. The entire stoppage of the trade of this part of the Empire, and the distress resulting from it tended greatly to cause a general desire for the suspension of hostilities.

The *Cornwallis* and several of the men-of-war, with the transports, leaving Chin-kiang on the 1st and 2nd August, arrived off Nanking on the 8th.

The negotiations with Elepoo, who was unprovided with proper powers, having failed, the *Cornwallis* moved on the 10th August into a position from which the northern angle of the wall could be battered, and the *Blonde*, frigate, was towed down the creek to co-operate with her. Deducting the garrison at Chin-kiang-fu and the sick, the force for the attack of the city amounted to 8,400 men, exclusive of officers—a force sufficient to capture it, but insufficient to maintain itself there. On the evening of the 10th, Lord Saltoun's brigade disembarked at the lower extremity of the creek and occupied buildings in the vicinity. The artillery disembarked at the same point, and every preparation was made to move by the paved road, which commenced at the landing-place, five miles distant from the city, towards the Tatar city.

The attack on the north-east wall, at first contemplated, was abandoned in consequence of there being found to exist along its front a wide and deep ditch.

Lord Saltoun's brigade advanced by the paved road and bivouacked at the village of Makur-keow (Mucou); the 3rd brigade then disembarked. A reconnaissance of the Taiping gate, to which the paved causeway led, indicated it as a favourable place to be attacked. During the 11th and 12th, the artillery were engaged at the landing-place (Ma-tam-kiang) in getting some 9-pounders and howitzers (10-inch) on shore, and by the 13th every preparation had been made for the attack, and the force collected about Makur-keow, which provided excellent billets and stabling and abundance of forage and litter. The majority of the houses of Makur-keow consisted of the country residences of men of rank; each was surrounded with a high wall, pierced by doors for ingress and egress only; within were open spaces or quadrangles, around apartments and dormitories were built, opening into the area by lattice doors. Excepting the roofs and outer enclosure

Billets at Makur-keow or Mucou.

walls, the houses were of wood; the inner trellised portions were profusely ornamented with carving. Within the village stores of raw silk and coal were found.

The promptness of these movements had the effect of causing Elepoo to produce an authority sufficient to justify a suspension of hostilities. After several preliminary meetings, a treaty of peace was signed on board the *Cornwallis*, by the plenipotentiaries Sir. Henry Pottinger and Elepoo, on the 29th August 1842, of which the following were the articles :—

- 1.—Lasting peace and friendship between the two nations.
- 2.—China to pay 21 millions of dollars within three years.
- 3.—The ports of Canton, Amoy, Fu-chow, Ningpo, and Shanghai to be thrown open to British merchants. Consular officers to be appointed to reside at them, and a regular and just tariff of imports and exports to be established.
- 4.—Hong-Kong to be ceded in perpetuity to Great Britain.
- 5.—All subjects of Her Britannic Majesty to be at once unconditionally released.
- 6.—An amnesty to be granted to all Chinese subjects who had held intercourse with the British.
- 7.—Correspondence to be conducted on terms of perfect equality, amongst the officers of both Governments.
- 8.—On the Emperor's assent being received to the treaty and six millions of dollars paid, the British forces to retire from the Yang-tse, holding Ku-lang-su and Chusan, until the money payments and arrangements for opening the ports were completed.

Elepoo was most anxious that the fleet should leave the Yang-tse, prior to the ratification of the treaty by the Emperor; this our Commissioner wisely declined to do; for so long as the Chinese could shift the scene of the drama from one point to another, they were less likely to bend the neck and yield to the inevitable necessity of making peace, short of our dictating its terms at Peking itself. The stoppage of the Yang-tse trade had been the heaviest blow yet struck, yet many still thought that nothing short of the capture of Peking itself, at some future date, would compel the Chinese to hold reluctant intercourse with us and keep faith.

The country about the Ming tombs in August is described as being covered with a fine rich grass and the neighbourhood to be rich and diversified, with droves of ponies careering over its grassy plains. Mosquitoes existed to such an extent as to be a pest, and the heat was very great, so much so that the men of the 98th Regiment, who had not recovered from their close confinement in the *Belle Isle* (an old 74, converted into a troop-ship), and their exposure to the sun at Chin-kiang-fu, and who had occupied uncomfortable quarters on the bank of the lower creek, suffered most severely. This regiment, before quitting the Yang-tse on the 10th October, had lost, by death, 160 men, and had in hospital 430, of whom 100 followed their hapless comrades before the close of the year.

The Tatars had prepared to resist along the whole line of the Tatar city, all points favourable to escalade having been especially strengthened. This mode of attack, apparently unknown to them before the loss of Chin-kiang-fu, *where the barbarians are described as coming over the walls on long sticks*, points to the greatness of the want of originality amongst the Chinese race; for, as all their towns are fortified by walls, it would seem impossible that the possibility of surmounting them by ladders should have been overlooked, or not attempted by themselves in their internecine wars. At the Taiping gate a vulnerable point, nothing had been done, and apparently there was no guiding spirit to over-look the whole; each section of the defence depended for its efficiency on the ignorance or ingenuity of the particular officer placed in charge of it.

On the 15th September, the Emperor's assent to the treaty, signed on the 29th August, was received at Nanking. The steamers were enabled at Nanking to supply themselves with coal.

Break-up of the Expedition.

All the transports were on their way down the river by the 20th September, and, after a *rendezvous* at Chusan on the 12th and 14th October, they left in divisions for Hong-Kong, assembling there about the 18th November, putting to sea for England finally on the 20th December.

Beyond riots at Canton, where mob feeling against the intrusive barbarian ran very high, the hostilities, which commenced in 1839, terminated with the signing of the treaty of Nanking. On the Viceroy of the province professing both his desire and ability to prevent their recurrence and to punish the rioters in the present instance, he was left to deal with the matter.

Riots at Canton, &c.

After the conclusion of the treaty of peace, information was received of the massacre at Formosa of the unfortunate natives of India, abandoned in the *Nerbudda*, and of the plundering of the *Anne*, merchant brig; the former, which was shamefully abandoned by her captain and crew, conveyed camp-followers, washermen, sweepers, doolie-bearers, &c., men, who, tempted by the high wages offered to them, had placed unbounded confidence in the ability and inclination of their employers to protect them against all misfortune and oppression within human control.

The Emperor was called upon to redress these outrages, which he did by degrading the governor of the island, and otherwise punishing those concerned in them. The captives had been represented to him as having been taken in a hostile attempt against the island.

During its early occupation, the climate of Hong-Kong proved most unhealthy, the Chinese even dreading its effects and considering the water pernicious.

Hong-Kong.

British and Chinese losses during the War, from 5th July, 1840, to 21st July, 1842 (including camp-followers).—MARTIN.

Date.	Name of Action.	Ordnance captured.	BRITISH AND INDIAN FORCES.			CHINESE.		
			Killed.	Wounded.	Total.	Killed.	Wounded.	Total.
1840.								
5th July	Tinghai-Chusan	91	...	...	...	Unknown.		...
	Chuenpee Fort	66	}	...	38	38	Many.	...
	War junks	82						
25th February	Tycocktow Forts	25						
	Anunghoy batteries	}	...	5	5	500	Many.	...
	and N. Wantong							
1841.	Forts	300						
27th February	Cambridge and war junks	98	1	8	9	300	...	...
18th March	Defences of Canton	123	...	6	6	400	...	...
25th May	(City and heights of Canton	106	14	112	126	1,500	5,000	6,500
26th August	Amoy and defences	550	...	9	9	Severa.		...
1st October	Chusan	134	2	27	29	400 to 500		...
10th October	Chinhai Citadel	150	3	18	19	150	Many.	...
1842.								
9th March	Ningpo night, attack	...	1	5	6	500	Great.	...
10th "	Chinhai "	...	...	...	...	32	Many.	...
15th "	Tsie-kee	...	3	22	25	800 to 1,000...		...
18th "	Chapu	92	13	52	65	1,000 to 1,500...		...
18th June	Wusung	250	2	25	27	200 to 250...		...
19th "	Shanghai	49	...	...	...	... | Unknown.		...
21st July	Chin-kiang-fu	...	30	126	156	Great.		...
TOTAL			2,118	69	451	520	Estimated at 18,000 to 20,000	

(To be continued.)

***DESCRIPTION OF SCENE OF HOSTILITIES, 1840-41.**

The opening scene of the hostilities, 1840, was laid in the neighbourhood of the Chusan archipelago, a large assemblage of islands lying at the mouth of Hang-chow bay, of which Chusan is the principal. After the first astonishment consequent on the British selection of Chusan Island as the point of attack, Chinese writers, by referring back three centuries, proved it to be the key of Central China.

Before 1550† the Japanese had carried on a considerable trade with the Ché-kiang province; but being ill-treated at Ningpo, and failing to obtain redress for their grievances, they fixed themselves at Ting-hai in Chusan, from whence they made successful incursions along the whole opposite coast of China. To repel these cost the Ming dynasty

* See Admiralty Charts, East Coast of China, Sheet 8, No. 1199; Chusan archipelago, South Sheet, No. 1429; Ting-hai harbour No. 1395; Kintang channel, No. 1770; Chusan archipelago, No. 1969; North bay, No. 1744; South and East islands of Saddle group, No. 1418.

† Davis, vol. I.

an enormous sum. Having first taken and sacked Soochow the Japanese repaired to the Yang-tse-kiang and reached Nanking, which, however, they did not take, receiving a large sum of money on condition of quitting the river. Similar misfortunes were augured by the writer of the paper in the present case; and it must be admitted that his prognostics were fulfilled. Observations of a like nature were elicited from various other quarters; and the opinion gained ground that *whoever occupied the Chusan archipelago would exercise an important influence on the destinies of China.*

Luh-wang, the largest of the islands in the south-west part of the archipelago, is $9\frac{1}{2}$ miles long, north-west and south-east, and six miles wide at its broadest part. It is well cultivated and maintains a large population.

Futo island is about $2\frac{1}{2}$ miles long, north and south, and a mile broad. Chuksa island is about seven miles long, north and south. Wolf bay, on its eastern side, affords anchorage at times in the north-east monsoon, and was resorted to in 1842 by the men-of-war from Chusan for water.

Poo-too island is $3\frac{1}{2}$ miles long, north and south, and in one place only half a mile across. The temples on it are numerous, on which account it is the resort of pilgrims. Water is plentiful. It is well cultivated and traversed by numerous causeways.

Chinkeamun harbour, at the south-east end of Chusan, carries on considerable fishing operations, employing about 35 junks, each with crews of from 30 to 35 men, and 250 smaller boats, averaging crews of five men each. The fish are sent to Ningpo, preserved in ice during the summer. The harbour is $1\frac{1}{2}$ cables wide, with four and five fathoms water in it abreast the town. The south-west entrance to the harbour has not more than $2\frac{1}{2}$ fathoms in it at low water. Chinkeamun is eleven miles eastward of Ting-hai harbour.

Chusan island, so called from its supposed resemblance to a boat, is 51 miles in circumference; its extreme length in a north-west and south-east direction being 21 miles, and its greatest breadth $10\frac{1}{2}$ miles. From the beach at Ting-hai, on the south side of the island, to the northern shore the distance across is seven miles; towards the eastern end it becomes narrower. The island is beautifully diversified with hill and dale, and well cultivated, with a garden-like aspect. Of the numerous small streams which run from the mountains, the most considerable is the Tun-kiang, which falls into Ting-hai harbour. The products are rice, millet, wheat, sweet potatoes, and yams; the tea plant is found everywhere, but is treated with little or no care; the cotton plant is largely cultivated near the sea. Besides the principal harbour of Ting-hai there are three other commercial ports, *viz.*, Chinkeamun at the south-east end of the island (above described), Ching-kiang or Singkong on the north-west side, and Shaaon at the north end.

The town of Ting-hai is $1\frac{1}{2}$ miles in circumference, and surrounded by a wall $14\frac{3}{4}$ feet high and 13 feet wide, surmounted by a parapet $14\frac{1}{2}$ feet high and 2 feet wide (*sic*). The southern face runs east and west, the west face north and south, and the eastern face north 350 yards, and then north-west. A canal,

83 feet wide and 3 feet deep, nearly encircles the city, and enters it near the south gate, which is about half a mile from the shore of the harbour. Canals form the principal means of transport, the roads being merely footpaths on the stone embankments, which prevent the encroachment of the sea on the rice-fields. Every large field has its canal for the purpose of carrying away the produce. The swampy nature of the country caused the first occupation of the island to be attended with considerable sickness. This sickness was unknown during the second occupation by the British, an immunity due to good food, good water and avoiding the rising ground, the summit of which was at night wreathed in a cold damp fog.

The population of the town and suburbs at the commencement of 1843 was about 27,500, but in 1846 it had increased to 35,000; the population of the entire island was estimated at 200,000. The principal exports are fish, coarse black tea, cotton, vegetables, tallow, sweet potatoes, and some wheat. The burying-ground of the British forces, which occupied Ting-hai from 1841 to 1846, is situated on the slope of the hill east of the Joss House.

Water is not good at Ting-hai and is sometimes scarce, the tanks in the rice-fields near the sea being the only supply, excepting wells which afford but a limited quantity; no running streams were found. The place finally adopted for watering by the squadron during the China expedition in 1840-43 was in the bay westward of Chuh or Guardhouse isle.

The following is a meteorological abstract deduced from monthly registers, kept at Chusan during the period the island was occupied by the English troops in 1840 :—

“The climate of Chusan is subject to a range of temperature similar to that in the same latitude upon the coast of North America, the thermometer in the shade standing at 103° in September and at 25° in February. September was generally fine, only four rainy days, rain falling for short periods; 1·8 inches fell; the barometer generally stood below 30 inches, falling in strong south-easterly and rising with northerly winds; height of the cistern above the sea, 72 feet. Very strong breezes were not experienced during this month. Winds easterly, 10 days; south-easterly, 6 days; north-easterly, 8 days; and north-westerly, 6 days. Range of thermometer 103° to 65°.

“The first ten days of October were fine, the remainder of the month over-cast; weather squally, much rain during the last week. Except the four first days of this month, the barometer was never below 30 inches, and rose as high as 30·33 inches, rising with fresh winds from the north-west. The winds variable, changing frequently during the 24 hours; they were from the north, 6 days; north-east, 12 days; north-west, 9 days, and 4 days from south-east to south-west. On the 29th the meteorological instruments were removed to the suburbs, where the height of the cistern of the barometer above mean tide-level was 24 feet. Range of thermometer, 92° to 51°.

"November was generally overcast, with rain; the barometer in easterly winds fell below 30 inches. Winds were November. north-east, 2 days; north-north-west, 8 days; north-west, 4 days; northerly, 4 days; westerly, 4 days; south-south-west, 2 days, and calm, 4 days. Range of thermometer, 74° to 40°.

"In December the weather was finer than last month; the barometer kept very high, being 30·59 inches on the 10th, December. winds light from the north-west; the mercury generally rose as the wind freshened from that quarter, and during calms fell to 30·02 inches. Winds south-westerly, $\frac{1}{2}$ day; westerly, 2 $\frac{1}{2}$ days; north-westerly, 15 days; north-easterly, $\frac{1}{2}$ day; northerly, 5 days; easterly, 1 day, and calm, 6 days; much rain during the last week. Range of thermometer, 77° to 27°.

"During January the weather was misty, with much rain; barometer ranging from 30·61 to 30·08 inches, falling previously to south-easterly winds. Snow the last two days. Winds fresh, with squalls; from the north-west, 20 days; west, 2 days; south-west, 1 day; north, 3 days; and calm, 3 days. Range of thermometer, 60° to 28°.

"February was generally fine; winds north-west, 5 $\frac{1}{2}$ days; north, 2 $\frac{1}{2}$ days; south-west, 1 day; south-east, 2 $\frac{1}{2}$ days, February. calm, 5 days. Range of thermometer 60° to 25°.

The greatest range of temperature during 24 hours was 28°.

"During January the barometer was at the height of 30·61 inches, and generally fell in light or easterly winds.

"A few days south-easterly winds occurred in September, but the northerly monsoon could not be said to have commenced until the beginning of October.

"The following are the number of rainy days in each month: September, 4 days; October, 3 days; November, 12 days; December, 7 days; January, 11 days; February, 3 days.

"Fogs are prevalent in April, about the period of the change of monsoon."

Ting-hai harbour, formed on the south side of Chusan, is fronted by many small islands, between which are the several Ting-hai harbour. channels leading to it. The outer and westernmost island is Ta-maou or Tower Hill, east of which, and distant 1 and 4 $\frac{1}{2}$ miles respectively, are the large islands Teijo or Elephant island and Pih-lou. Within, or to the northward of these, reckoning from the westward, are the islands called Ha-tse or Bell, Pwanche or Tea, Seaou-keu or Deer, and Ao-shan. The two small islands Tawoo or Trumball, and Wae-woo or Macclesfield, lie inshore or to the north-east of Tea island, fronting the city; there are many small islands and rocks among those larger ones above-named.

Ching-kiang harbour, on the western side of Chusan, is distant seven miles in a bee-line across country from Ting-hai, Ching-kiangharbour. On the islands adjoining it are extensive stone quarries. Near it is a snug anchorage much frequented by junks.

Ta-outse harbour, formed by a group of seven islets off the north end of Kin-tang, is small, but affords good anchorage, and may be recommended as a sanitary station for vessels obliged to make a lengthened stay in the River Yung. Kin-tang is well cultivated and produces abundant supplies, all of which, however, appear to be sent to Ningpo.

Shason harbour, or North Bay, formed between Chang-pih or Fisher island and the north end of Chusan, is two miles long, one three-quarter miles wide, and has a varying depth of from five to nine fathoms.

The northern part of the archipelago consists of numerous islands and rocks, which extend northward of Chusan, a distance of 40 miles, to the entrance of the Yang-tse-kiang, and front Hang-chow bay. With few exceptions, all are inhabited, and small amounts of supplies may be obtained from them; but, owing to the constant visitation of pirates, the inhabitants were (1842) in a very miserable condition. Many good anchorages will be found among them.

Vessels bound for the Yang-tse-kiang usually pass eastward of this archipelago.

Tides. It is high tide, full and change, in Ting-hai harbour at 11 hours; springs rise 12 feet, neaps 9 feet; at Poo-too island, at 8 hours 15 minutes, springs rise 12 feet; in Lan-sew bay at 10 hours, springs rise 13 feet; at Volcano island, at 11 hours 30 minutes, springs rise 15 feet; at East Saddle island 11 hours, springs rise 14 feet.

In the channel the tides are strong and run 4 to 6 knots.

Chê-kiang is the smallest of the 18 provinces of China, its area being computed at 39,000 square miles, and occupies the southern or terminal portion of the great central delta plain, of which the adjacent province of Kiangsu, bordering Chê-kiang on the north, constitutes the rich and productive centre. On the east the frontier is formed by the eastern sea, on the west by Kiang-si and Nganhway, and on the south by the mountains of Fukien.

All the most celebrated staples of China are produced in the province of Chê-kiang. Silk, tea, cotton, rice, and minerals, including coal and iron, are among its principal natural productions. Its internal waterways are numerous and good.

Trade. The principal imports consist of cotton and woollen manufactures, and opium, &c.; the exports are chiefly green tea, silk and cotton, both raw, and copper.

It is to the proximity of Ningpo to Shanghai and the comparative difficulty of internal navigation that trade at Ningpo is more restricted than was expected. In 1882 the foreign imports amounted to *tâels* 6,110,000, and the exports to *tâels* 3,764,000.

Prices of provisions are more moderate than at Shanghai. Game is plentiful in winter, and fish, including mackerel, is obtained of superior quality and in abundance.

Provisions.

From enquiries made at Ningpo, as well as at Chusan, it appears there would be no difficulty in obtaining from the mainland a considerable and constant supply of cattle. It is said that they are principally brought from Tae-choo-foo, about 90 miles south of Chusan on the mainland. Horses are so scarce in the neighbourhood that no idea of procuring any number could be reasonably entertained.

The coal mines of the province of Chê-kiang exist near the city of Iwu, in the hills in which the Tseen-tang rises, and about 100 miles distant from Ningpo. The coal is very bright and looks like the cannel coal, but is not bituminous. Its price at the pit's mouth varies from 200 to 500 cash per burden of 130 catties, or 162 to 4 dollars, per ton (English). Iron occurs in the province as a surface deposit.

Coal.

The coast from Chin-hai, at the mouth of the Yung, trends in a north-westerly direction, and is fronted by a mud bank, dry at low water for nearly $\frac{1}{2}$ mile from the sea embankment, and is steep too. Seven miles from Chin-hai and $\frac{1}{2}$ mile from the shore is a group of five islets, the Friendly Islands; 4 miles further north-west is Talung island, a high bluff 920 feet high, forming the southern horn of Hang-chow bay. From Talung the coast trends more to the west, and for over 30 miles is fronted by a dangerous mud bank which, eight miles from Talung, dries seven miles off shore. The tide here increases its velocity to six knots.

Standing in a bight in the north shore of Hang-chow bay is Chapu, a town of considerable importance, the port of Hang-chow-fu, and the only one whence the Chinese carry on trade with Japan. The town lies at the bottom of a bay, on the western face of the hills, forming its eastern point, and at low tide the mud runs out a long way from the lowland lying between these and some distant hills whose tops are covered with buildings. The suburbs are situated near the western extremity of a small headland which runs back four or five miles and lines the beach on both sides, the central part being hilly; the walled town stands about half a mile behind. The anchorage here is sheltered from east-north-east to south-south-west; but the tide runs five knots at springs, and the rise and fall is 25 feet. The mud dries half a mile from high-water mark and is steep too. At 18 miles south-west of Chapu there is a protected bay in which junks lie aground, and on the hill above it, in 1842, was a 4-gun battery; this place is supposed to be the Kan-poo of Marco Polo.

Chapu.

The plain in which Ningpo is situated is a magnificent amphitheatre, stretching away from 12 to 18 miles, on one side to the base of the distant hills, on the other to the verge of the ocean. Looking landward, one sees canals, watercourses, fields and farm-houses, hamlets and villages. Looking in the opposite direction is a plain country descending towards the sea; the river is alive with boats.

Plains.

The alluvial lands, stretching to the northward of the bay of Hang-chow in the direction of Shanghai, are lower than the sea-level, and only preserved from inundation by massive and costly dykes.

Some 30 miles westward and southward of Ningpo are the hills of Tiendong, and 40 to 50 miles south-west of Ningpo

Hills. is the snowy valley, with its wild mountain gorges.

The capital of this province (Chê-kiang) is Hang-chow-fu, on a plain about two miles from the north bank of the river

Hang-chow-fu. Tseen-tang, 20 miles above its entrance and 80 miles

from the sea. It was the metropolis of China under the Lunr dynasty. Its chief manufacture is silk. The southern termination of the Grand Canal is at Hang-chow-fu, but it has no opening into the river; there is also continuous water communication with Shanghai and with Ningpo.

The Chinese city of Ningpo is situated on the river Yung, immediately above the junction of its two branches, its

Ningpo Position. walls extending along the river side, up both of them, in latitude $29^{\circ} 55' 12''$ N., and longitude $121^{\circ} 22'$ E. This is one of the five ports originally thrown open to European commerce by the British treaty of Nanking 1842, and the only one in Chê-kiang province.

The walls of Ningpo enclose a space of nearly five miles in circumference, describing an irregular oval, the narrowest

Walls. portion of which is to the north. The south-eastern face of the wall is carried along the banks of the river running down from Fung-wha, whilst the north-eastern face is parallel to the lesser stream which descends from Yu-yao. The walls are solidly built of brick on a substratum of sandstone and granite, and are about 25 feet high, 15 feet broad at the summit, and 22 feet at the base. There are six gates in them, called the East Gate (fronting the angle of the confluence of the rivers), Bridge Gate, South, West, North, and Salt Gates. The last one immediately faces the foreign settlement. On the landward side the walls are further protected by a wide, deep moat, which commences at the North Gate, and runs along the front of the wall to the Bridge Gate, a length of three miles. It is in some places 40 yards wide, well supplied with water from the river, and deep enough to be navigable by boats of small size. A floating bridge across the river immediately opposite to the Bridge Gate, 200 yards long and 6 broad, consists of planks lashed together and laid on barges, which are closely linked together by iron chains; a drawbridge near the centre gives passage to boats.

The city is crossed by thoroughfares connecting the different gates, the main street being that which traverses it from east to west.

At distances of 200 to 300 yards apart, walls are built across various portions of the city to arrest the spread of fire. The streets are, comparatively with those of other Chinese towns, clean and well paved, and its houses and shops well kept.

The site occupied by the foreign community in the promontory formed at the junction of the two rivers, opposite the northern face of the city.

Postal arrangements are conducted at the British Consulate. There is no direct communication with Hong-Kong, but

Communications. steamers run daily to and from Shanghai; steamers also run between Shanghai, Ningpo, and Fuchow.

As a prefectural city, Ningpo has the usual staff of native officials, including the magistrate of the Yun district, of which this is also the chief city. The Tao-tai, or Intendant of Circuit of the Ningpo and Shao-hing prefectures is the highest civil authority and acts as superintendent of customs.

Besides the British, United States, and French Consuls, no other foreign powers are officially represented.

In recent years the influx of disorderly characters of all nations has necessitated the establishment of a small police force in the foreign settlement, consisting of some three or four constables paid by the community.

Climate.

The climate and meteorology of Ningpo do not differ in any important respect from those of Shanghai.

A greater degree of salubrity prevails here, however, owing probably to the water in the river being salt instead of fresh, and consequently less conducive to malarial exhalations. It has the advantage, too, over Shanghai of proximity to the sea and the neighbourhood of many hilly regions where pure air and moderate temperature can always be enjoyed.

The population of Ningpo has been estimated at 380,000, but probably does not exceed 250,000. The China Sea Directory gives the number to be about 300,000.

The natives are industrious, intelligent, enterprising, and of mild disposition. The foreign community number about 60 in all.

The principal stream in the province of Chê-kiang is the river Tseen-tang, which formerly went by the name of the

Tseen-tang-kiang.

Chê-kiang. It rises in the mountains in the south-west corner of the province, takes, with its affluents, a north-east direction and falls into the bay of Hang-chow.

The velocity of this stream indicates a rapid descent of country from the hills which supply its head-waters.

The tide rises 6 to 7 feet opposite the city, and it is said 30 feet within its entrance. Captain Collinson found the tide

Tides.

to run $11\frac{1}{2}$ knots. The peculiar phenomenon of the "eagre" or "bore" occurs off the city, the first of the flood coming up in a huge smooth wave, 6 to 12 feet high.

The river Yung stands next in size to the Tseen-tang, but far superior to it in importance, in the province of Chê-kiang. It is in reality formed by the confluence of three large

River Yung.

streams. To the north-west a large stream variously called the Yao, the Shun, and T'ze-ki, runs down through the districts of Yu-yao and Tsie-kie. To the east is another stream, known as the Yung, a name which it only retains to ten miles above Ning-po where it branches in two lines, one to the south-west under the name of the Ying, the other to the south-east under the name of Fung-wha. At the eastern angle of Ning-po this twin tributary joins the T'ze-ki, and the united waters then flow north-east and north in a deep channel to Chin-hai, where they enter the sea, $11\frac{1}{2}$ miles from the point of confluence. The river goes by various names from Ningpo to Chin-hai—the Yung, the Ta-tsieh, and the Siao-tsiah; in some English charts it is erroneously called the Ta-hiah. Chin-hai, its maritime town, is built on the west side of the river's en-

trance close to the south-west side of Citadel hill. Between it and Ningpo the river is about two cables wide and five to two fathoms deep in mid-channel. Vessels of 17 feet draught can ascend to Ningpo at springs, at half tide. The middle passage into the river is probably the best of the three. Two light-houses exist on the island at its entrance. European pilots are to be got at Chin-hai. It is high water at Chin-hai at 11 hours 20 minutes, and springs rise $12\frac{1}{2}$ feet. At Ningpo it is high water at 1 hour, and springs rise 9 feet.

The city of Chin-hai lies at the foot of a hill, upon a tongue of land on the left bank of the Ningpo river. Its castellated walls are not much less than three miles in circumference, and are connected with a substantial stone embankment which runs up the coast for a distance of fully three miles, for the purpose of protecting the land from the encroachments of the sea.

On the southern side of the river is a range of steep hills overlooking the citadel and the city itself. In 1842 the river was strongly staked across and numerous batteries constructed on either bank.

Elepoo in 1841 established a foundry here capable of casting heavy cannon.

Amoy island occupies the northern portion of the great bight between Chin-hai and Hu-i-tau points. The city of Amoy stands on the south-west part of the island, abreast the island of Kulangsu, which affords protection to the inner harbour.

The city lies near the mouth of the Lung-kiang. Its population numbering 200,000, is quiet and inoffensive, and possessed with a spirit of considerable commercial enterprise and disposition to emigrate and colonise.

The consulate and foreign residences are built on the island of Kulangsu.

The net trade in 1882, coming under cognisance of the Imperial Customs, amounted to $11\frac{1}{2}$ million taels.

In that year 598 British vessels of 407,077 registered tonnage entered inwards, and 496 cleared outwards of 918,278 registered tonnage.

The imports are cotton and woollen manufactures, metals, opium, rattans, rice, wheat, peas, &c. ; the exports are alum, building materials, gold leaf, camphor, paper, sugar, tea, tobacco, rice, wheat, peas, &c.

The hills about the city are abrupt and barren, rising to a height of some 600 feet.

There are three docks, ably managed by the Amoy Dock Company. There is also a wharf with 18 feet water alongside at springs. The chief dock is on the Amoy side and is capable of taking a vessel 300 feet long ; that on the Kulangsu side is 240 feet long ; the third is 186 feet long.

Kulangsu island is separated from the south-west shore of Amoy harbour by a channel 2 to $3\frac{1}{2}$ cables in breadth and $1\frac{1}{2}$ miles in length, which forms Amoy harbour. The island has a circumference of four miles ; it is principally of granite, and fresh water from wells is plentiful. There are two distinct ridges on it, the highest summit of which is 300 feet high.

The outer harbour of Amoy has extensive anchorage in 7 to 16 fathoms, with good holding ground.

There is also good and safe anchorage in 7 to 17 fathoms in the channel on the western side of Kulangsu.

It is high tide, full and change, in Amoy inner harbour at 12 hours; ordinary springs rise $18\frac{1}{2}$ feet, neaps $14\frac{1}{2}$ feet. The greatest velocity at springs is four knots.

From August to December a vessel may be taken into Amoy dock drawing $18\frac{1}{2}$ feet. In April there are only 16 feet on the blocks.

The scenery about the town is exceedingly picturesque, the appearance of the country being mountainous and striking. Several considerable rivers pour their waters into the bay and facilitate inland communication. Nearly two-thirds of the city are washed by the sea. The city and suburbs are about eight or ten miles in circumference.

A line of steep, rocky hills, traversed by a narrow, paved causeway, separates the suburbs from the inner town.

The walls are castellated and vary in height from 20 to 30 feet. Each of the four principal gates is double, with an intervening courtyard, the entrances being at right angles to each other. The shops are generally well supplied with the necessaries and luxuries of life, and there are many fine houses in it which indicate the possession of wealth and consequence. A large trade is carried on with Formosa, Java, and the Straits.

((To be continued.))

THE PESHAWAR BORDER.

By Captain E. G. BARROW, 7th N. I.

So many officers of the Bengal Army have been, are, or will be stationed in the Peshawar Valley that possibly some account of the lawless tribes which compass it round about may not be without interest to those who have not access to official documents and Gazetteers.

Without such access officers must necessarily form very vague conceptions of the distinctions and affinities between the many clans of savages who dwell in the surrounding hills, and with whom they are from time to time brought in contact. And to those who are not satisfied with vague or confined ideas, this article, short as it is, may prove of value.

It is based entirely on the latest official information, and is written with the permission of the Intelligence Branch.

In a former article, entitled "Tirah," written in 1881, I gave some account of the Afridis and Orakzais, but that was only written with reference to one particular region, and with a special object in view, while this embraces a wider field, and aims only at giving in a concise form such statistical and topographical information as may be of interest to those who wish to know something more of our Pathan neighbours than they are ever likely to learn by merely gazing at the impenetrable veil of hills which surrounds Peshawar.

To begin with it must be clearly understood that, though the several tribes may have no common origin and are subject to no common rule, yet by language, by their manners and customs, as well as by their geographical position, they may all, from the Waziri hills to the Kunar valley, from Kabul to the Indus, be classed as one great people under the generic designation of Pathans. A people speaking one common tongue, the Pushtoo, and possessing one code of unwritten laws which nobody obeys. Within the British border many of these Pathan tribes, such as the Yusufzais and Khataks, have settled down as peaceful cultivators and orderly subjects, but beyond the border we enter a republic of robber clans where every man does right in his own eyes and wrong in every one else's.

The first and most prominent of these robber tribes is the *Afridi*. This is the tribe with which the dweller in Peshawar is brought, as it were, into daily contact. The wood-carriers he meets in his morning rides are mostly Afridis. The hills on which he daily gazes, from the great mountain peak of Tatarah westwards and southwards to Jalalabad, near the Cherat sanitarium, belong to the Afridis. It is, therefore, only in the fitness of things that we should commence with an account of this formidable tribe.

The Afridis, as everyone knows, comprise eight great clans, viz :—

The Adam-Khel	...	...	4,400 fighting men.
„ Aka	„	...	1,800 „
„ Sipah	„	...	1,200 „
„ Kamar-Khel or Kamarai	...	...	1,000 „
„ Kambar-Khel	...	...	3,500 „
„ Malikdin	„	...	4,000 „
„ Zakha	„	...	4,000 „
„ Kuki	„	...	4,000 „
Total			23,900

Of these the last six are known as the Khaibar Afridis, from their political connection with that world-famous Pass, but the Kuki and Zakha-Khel are the only clans which actually dwell in the Pass. All the six Khaibar Afridi clans are, however, responsible for a certain portion of the Pass, and in return receive certain allowances subject to good conduct. This subsidy amounts to Rs. 89,540 per annum, including personal allowances to certain Maliks, and Rs. 9,660 to the Loargai Shinwaris.

The origin of the Afridis is lost in the obscurity of ages. Various accounts are given by different writers, but the most probable is that given by Dr. Bellew. He identifies them with the Aparytæ of Herodotus. According to their own traditions they are all descended from one Afrid. This Afrid had four sons—Miri, Aka, Adam and Ula, from the last of whom again are descended the six Khaibar clans. The actual history of their descent is, however, immaterial; what we are chiefly concerned with is the fact that for centuries past these hill men have been what they are to-day, lawless robbers without a ruler, a thorn in the side of every settled government.

Sir Lepel Griffin, in one of his reports, describes the Afridi admirably. He says: "In general they are a tall, athletic race, hardy and capable of great endurance. The experience of the late campaigns, however, has not increased their common reputation for courage. They seldom attack unless great superiority of numbers or advantages of position are on their side. They prefer to fight at long ranges, and never come to a hand-to-hand encounter except with unarmed men or camp-followers. In the ranks of our army, however, improved by discipline and emulation, they have often shown the best qualities of a soldier; unless thoroughly humbled or convinced of the advantages of peace they never omit to follow up a retiring enemy and to harass his retreat with great skill and some spirit. In Guerilla warfare their genius lies.

For treachery and shameless avarice the Afridi is a byword even among his neighbours. These are the only qualities which can be safely trusted to influence his actions, and the man who would win and rule them must carry a purse in one hand and a sword in the other. Gold and force are the only arguments the Afridi understands.

As a rule he is pleasant, open and frank in his intercourse with Europeans, but the favorable impression at first created is only temporary."

In dealing with Afridis the most essential qualities are patience, firmness and tact. Their suspicious and jealous nature, the avarice

and rivalry of their headmen, the complex intrigues in which they engage, the bigotry of their Moollahs, and their endless tribal and family feuds demand more than an ordinary display of the qualities indicated.

The above remarks apply in a greater or less degree to all Pathans.

The Afridi territory may be roughly said to consist of :

- (1). The Khaibar hills south of Tatarā.
- (2). The Bazar valley.
- (3). The Bara valley with Rajgul at its head.
- (4). Maidan and Waran.
- (5). Kajurai.
- (6). The Bassi-Khel hills south-west of Peshawar.
- (7). The Adam-Khel hills between Kohat and Peshawar.

Of these Maidan, Waran, Rajgul and the upper part of the Bara valley may be included in Tira, a region which also embraces much of the Orakzai country.

Afridi land may thus be said to consist of two parts : the highlands of Tira with their glorious climate, their picturesque fir-clad slopes and their fruitful valleys ; the lowlands, which encircle the Peshawar valley, with their bare rocky hills and narrow arid glens. The tribe, except the Adam-Khel, may be considered, generally speaking, as a migratory one. In summer they seek the cool seclusion of Tira ; in winter they come down to Bazar, the Khaibar, and Kajurai, where they not only escape the cold and snows of Tira, and can pasture their flocks and herds, but are able to eke out a scanty subsistence by selling firewood and by the profits of robbery. This semi-nomad life is a feature of considerable political importance, as in winter a blockade of the Khaibar clans would reduce them to the utmost straits by shutting them out from their grazing grounds in Kajurai and the *maira* at the base of the hills, and by debarring them from all trade with Peshawar, while in summer so independent are they of us that it is with the greatest difficulty that the *jirgas* or tribal councils can be assembled when summoned by the civil authorities.

The importance of the Afridi tribe lies in their geographical position, as well as their comparative strength. They hold, to a certain extent, the command of both the Khaibar and Kohat passes, and in order to keep these routes free to trade we have been compelled to purchase the good will of the tribesmen by the grant of subsidies. This system of subsidies, though in a sense 'black mail', is not without its advantages, as by withholding or threatening to withhold the allowances we have always a ready means of punishing or bringing to reason a people so avaricious as are these brigands. The loss of allowances and blockade are powerful arguments which often obviate the more costly one of a punitive expedition. As regards their comparative strength it lies not so much in any physical or moral superiority, but in the fact that this tribe is out and away the best armed of all, and also because a very large number of Afridis have received a military training in the ranks of our army or in the police. The Kuki and Zakha-Khels are particularly well armed, having acquired many rifles at the capture of Ali Masjid in 1878. It is

no exaggeration to say that the Afridis have several thousand rifles in their possession of which many are breech-loaders.

As stated above the tribe consists of eight great clans, and as a rule it is only with one of these clans or even with a sub-division of one of these clans that we are ever brought into collision. On most questions there is no cohesion between the several clans, while their conflicting interests are often a powerful lever on our side. I propose therefore to give a few brief details regarding each.

The Adam-Khel.—Strategically or politically this clan is almost distinct from the rest. It inhabits the tongue of hilly country between the Peshawar valley and Kohat, a wedge, so to speak, projecting from Tirah and severing our lateral communications along the frontier. This wedge from the Kohat Pass eastwards is about 18 miles long and about a dozen broad. Three routes intersect it: the Pass itself, which is a very good military road, the Jawaki Pass through Bori and Jamu, a difficult path, and a very fair camel road from the Khwara valley up the Musa-Dara to Pastaoni where the Jawaki route is joined. The hills through which these passes run are rocky and scrub-covered, varying in elevation from three to five thousand feet. The valleys as a rule are mere ravines, but there are exceptions, such as Bori, Torsapar, Jamu and Turki. The Adam-Khel consists of four main sections:

		Approximate fighting strength.
The Galai or Gali-Khel	...	1,000
„ Jawakis	...	1,400
„ Hasan-Khel	...	1,300
„ Ashu-Khel	...	700
		<hr/> 4,400

The tribe generally, and more especially the Pass Afridis, is largely engaged in the salt trade and possess many camels. They are not migratory like other Afridis, and consequently their villages are of a more substantial nature.

The Galai occupy the southern end of the Kohat Pass as well as the Torsapar valley, the most inaccessible of the Adam-Khel settlements.

The Jawakis hold the central portion of the hills *viz.* Bori, Pastaoni, the Walai ravine, Jamu and Turki and all the low country north of the Tambol-Sar.

The Hasan-Khel consists of numerous subsections, but may be conveniently grouped into three heads. (1) The Akhorwals at the northern end of the Pass mustering about 300; (2) the Janakhoris on the Peshawar border between the Jawakis and Cherat, say 800 men; (3) the Musadara group between Pastaoni and the Khwara valley, 200.

The Ashu-Khel of Kandar, Kandao and Uchalgada, is an unimportant division mustering only 700, of which one-half, the Kalah-Khel, is migratory, going in summer to Maidan in Tirah. The Ashu-Khel from their situation on the Peshawar border are completely at our mercy.

Our differences with the Adam-Khel have mostly been in connection with the Kohat Pass. Certain tribes are given certain allowances in return

for keeping the Pass open, over Rs 13,000 being distributed in this way between the Afridis, Orakzais and Bangashes. Of this amount

The Galai get ...	...	...	Rs. 3,390
„ Akhorwal ...	...	...	„ 2,150
„ Janakhoris	...	...	„ 400

The Jawakis forfeited their share by their hostile attitude towards us in 1877-78.

Since Sir Colin Campbell forced the Pass there have been several little expeditions, and one rather protracted campaign, that with the Jawakis.

The result of these has been that a very complete knowledge has been obtained of the whole Adam-Khel country. As the Pass plays so important a part in Adam-Khel politics it may be as well to give a brief description of it. From Eimal-Chabutra to the *Kotul* it is about nine miles long and is for the most part a level strip of arable land three to eight hundred yards wide bordered by steep rocky heights. The road is a stony or sandy path, here and there crossing patches of cultivation, near which small fortified hamlets are dotted about. At seven miles the hills close in and the Pass becomes more winding. The *Kotul* with its watchtowers is reached at five miles from Kohat and is 1,500 feet above it.

The Adam-Khel may be considered comparatively rich, and it is perhaps owing to this that they do not contribute a larger proportion of sepoy to our army.

The *Aka-Khel* live in the hills bordering the Peshawar Valley between the Kohat Pass and the Bara river. In summer they go up to Waran a narrow valley in Tirah. They number about 1,800 fighting men, and being about the poorest section of the Afridis are also perhaps the most predatory. They have more than once invited punishment, but no expedition has ever yet entered their hills, as blockade and the loss of their pasture grounds in the *maira* south-west of Peshawar have always proved sufficient to bring them to reason. The *Aka-Khel* and *Basi-Khel* are often confounded, the latter, however, is not a distinct clan, but merely the most powerful section of the *Aka-Khel*. They get Rs. 1,000 out of the Kohat Pass allowances, as a sort of compensation for the loss of certain claims to lands at the entrance of the Kohat Pass. The *Aka-Khel* can scarcely boast of a single village, as nearly all dwell in caves, to attack them therefore in their hill fastnesses is almost useless, blockade with the consequent loss of pasture grounds is the surest punishment.

The *Sipah* muster about 1,200 fighting men. They dwell on the left bank of the Bara river in Kajurai and in the Bara Valley above the *Aka-Khel*. Their principal village Alamgadar lies only a couple of miles west of Bara fort, from which its towers are plainly visible. The waterworks which supply Peshawar are fed from the Bara river close to *Sipah* limits. The *Sipah* have always conducted themselves fairly well, perhaps because their chief village is so completely at our mercy. They participate in the Khaibar Pass allowances and are responsible for a certain portion of the road.

The *Zakha-Khel* is undoubtedly the most powerful, the most

important and the most troublesome of all the Khaibar Afridis. To begin with they number 4,000 fighting men, a very large proportion of whom are armed with rifles. In the next place they hold a considerable portion of the Khaibar between Kata Kushtia and Landi Kotul, and finally by their position in Bazar and the central part of the Bara Valley they close the routes to Afridi Tirah. The other clans have therefore either to propitiate them or to fight them for a right of way, the influence of the clan in all Afridi questions is, therefore, obvious. It was this clan which during the early part of the Afghan war so persistently annoyed our line of communications, and it was mainly to punish the Zakha-Khel that the two Bazar expeditions were undertaken, and all the towers in that valley destroyed. The Zakha-Khel like all Afridi clans are subdivided into many sections and subsections, those with which we are most concerned are the Pakhai who occupy the little fortified hamlets which so many will remember on the road to Landi Kotul, and the Khasrogi and Za-u-din who are perhaps the most inveterate robbers of the whole clan, and are more or less concerned in every raid which occurs from Landi Khana to the Bara river. The Zakha-Khel receive a larger share of the Khaibar allowances than any other clan, their share being Rs. 1,400 per mensem, and the distribution of this sum is a fruitful source of dissension which gives rise to many heartburnings. The Zakha-Khel lands consist of the central portion of the Bara Valley, the eastern end of Maidan in Tirah, the Bazar Valley and the Khaibar about Lalabeg. In Maidan and Bara they are safe from reprisals on our part, unless we are prepared to undertake an Afridi war, but in Bazar we can probably mete out punishment whenever we choose, without interference from the other clans, while the Pakhai section in the Khaibar can always be coerced or brought to reason by the loss of its allowances. The Bazar Valley must always play a considerable part in Khaibar politics, as not only does it directly menace the Khaibar, but it is the highway through which lies the route from Tirah, so that if we can control the Bazar Valley, the Khaibar itself is secure from attack. Probably the simplest way of guarding the Khaibar in the event of our again using that route would be to occupy in force Chéna or some other central point in Bazar, and so also watch the routes which outflank the Khaibar on its southern side. Bazar is a rocky sterile valley about ten miles long and four or five miles wide surrounded by lofty ranges of hills and watered by a single stream, the Chura. It lies at an elevation of about 4,000 feet, but is hot nevertheless in the summer months.

The *Kamarai* or *Kamar-Khel* are a small and unimportant clan dwelling high up the Bara Valley west of the Zakha Khel. They give us little or no trouble and they only get Rs. 250 a month out of the Pass allowances. They muster about 1,000 fighting men and their sole importance lies in the fact that they command the Tsaukh Tangi, the easiest pass between Bara and Maidan, and as that fact does not concern us in any way, we can afford to disregard the clan altogether. The bestowal of allowances at all is indeed an act of grace on our part.

The *Kambar-Khel* inhabit the Maidan of Tirah, many of its members, however, coming down to Kajurai for the winter months. Though

in numbers powerful this clan has very little influence in Khaibar affairs, and as a matter of fact we have less to do with this section than with any other except, perhaps, the Kamarai. Together with the Malik-din-Khel they form a powerful Afridi faction known as the Mir-Ahmed-Khel from the name of a common ancestor. The Kambar-Khel are said to devote themselves more than other Afridi clan in Tirah to cultivation.

The *Malik-din-Khel* is a powerful clan which gives many good recruits to the army and the police. They muster 4,000 men and get as much as Rs. 1,300 of the Pass allowances, being responsible for the most important part of the Pass, that between Ali Masjid and Kata Kushtia. Besides their holdings in Kajurai and Maidan they possess Chura, a fairly large village at the entrance of the Bazar Valley. The *Malik-din* is a fairly well behaved clan, and is a useful one to play off against the *Zakha-Khel*.

The *Kuki-Khel* is next to the *Adam-Khel*, the clan with which we are most nearly brought into contact. Theirs are the villages which cluster round Jamrud. They occupy the eastern entrance to the Pass as well as the hills and glens between the Peshawar Valley and that great bold shoulder which is known as Rotas. Their summer retreat is Rajgal, a beautiful wooded mountain glen, in which one branch of the Bara river takes its rise. The *Kuki-Khel* are great rivals of the *Zakha-Khel*, and the feud between these clans may be reckoned on as a constant factor in Khaibar politics. They muster 4,000 fighting men, their chief Malik being the well-known Abdula Nur. The *Kuki-Khel* villages at the mouth of the Khaibar are completely at our mercy and are hostages, so to speak, for the good conduct of the clan. The above brief account of the Afridi clans may serve to give a tolerable idea of their situation and status. It only remains to offer a few general remarks regarding the political and social condition of the tribe.

Each clan is represented by one or two principal *maliks*, but these *maliks* have no real power or authority and their influence is entirely personal, and the acts or promises of the maliks are by no means binding on the tribesmen. On the other hand the *Jirga* or council of elders is a representative body tacitly authorized to act on behalf of the tribe.

Feuds are endless in their ramifications. Tribes, factions, families are all embraced in the bloody thralldom of the *vendetta*. It may, however, be said that feuds are temporarily forgotten in the presence of a common enemy. For instance there may be no love lost between Kambar-Khel and Zakha-Khel, but both would probably combine against the Orakzais or Shinwaris. The *moollahs*, except during periods of fanatical excitement, have little of the influence and sway exercised by their order in Swat or Buner. In fact, except in the case of an invasion of Tirah, it is doubtful whether any leader, be he priest or chieftain, could unite the Afridis in one common bond. On all ordinary questions we can ensure the isolation of any one tribe or party by the wiles of diplomacy. In their rivalries and rapacity lie their weakness and our strength.

MORAB, 18th January 1884.

Since the above was written, Malik Abdula Nur has gone the way of all true Afridis. He has perished in a blood feud.

OCCASIONAL PAPERS.

THE Times tell us that the total area of the Australian Colonies is 3,103,903 square miles, with a population of 1,449,258 souls. In 1880 the actual amount of land under cultivation comprised 6,371,238 acres. From this area there were raised 36,346,950 bushels of wheat, 17,766,875 bushels of oats, 3,506,191 bushels of barley, and 6,335,239 bushels of maize. It produced, too, 424,155 tons of potatoes, nearly 100,000,000 tons of hay and 1,871,861 gallons of wine. As regards cattle, the same Colonies possess 1,064,655 horses; 7,878,782 horned cattle; 65,915,765 sheep and 822,337 pigs. The revenue for the year 1879 amounted to £15,927,488, whilst that of 1881 reached £17,069,016. Imports for the same year were valued at £45,060,666 and exports at £48,866,168. The value of trade per head of population (children included) was little short of £35 yearly. Neither must it be forgotten that these Colonies are but at the outset of their development.

Germany.

DURING the recent manœuvres of the German Army at Mersburg and Homburg, a new marching equipment for infantry was tried. Under this system, says the Berlin correspondent of the *Standard*, each soldier has two semi-circular, or crescent-shaped cartridge pouches, fitting close to his body and each containing forty-one cartridges. He is further provided with a bag of strong waterproof material, attached to a leather suspender, while across his shoulder he carries his cloak wrapped in a waterproof linen mackintosh, and likewise his cooking utensils. The bread-bag, which is also of waterproof material, instead of hanging, as hitherto, from a strap over the breast, is fastened to the waist belt. The soldier further has a pair of light lace-up boots, something like mountaineering shoes, the tops being made of a kind of coarse sail cloth. The mackintosh which keeps the cloak dry is adapted for a variety of uses, either for a bed-covering or as a protection roofing at night, or for wearing during heavy rains on the march. The new equipment, which is the invention of Herr Weidmann, Councillor of the Intendance Department, is quite two pounds lighter than that hitherto employed in the German Army. The result of the trials this autumn has so far been entirely in favour of the new knapsack.

SINCE the year 1816, when the General Staff first took charge of the Topographical Survey of Prussia, the Official Cartography of that Kingdom passed through many vicissitudes, until it attained its present degree of excellence. The latest maps of Prussia distinguish by carefully selected symbols, railways, four kinds of roads, embankments, stone, wood and boat bridges, ferries, dry and wet ditches, foliferous and coniferous woods, wet and dry meadows, sand, heath, swamps or bogs, vineyards, hop-gardens, &c. The hills are delineated on Lehmann's system, with the exception of slopes up to 10 degrees, which are indicated by dotted lines, as first proposed by Müffling, and numerous altitudes are inserted. The larger rivers and lakes are coloured blue. Not the least commendable feature of these Staff maps is their clearness. The common error of crowding more detail into a map than its scale is capable

of exhibiting distinctly, has been avoided : and every name inserted can be read with ease and every feature delineated recognized.—*Ocean Highways*, April 1873.

It was in Saxony that Lehmann, a Civil Engineer and contemporary of Werner, the Geologist, for the first time, practically applied his scientific system of shading hills, which has since made the triumphal round of the world, and modifications of which have been accepted by official and private map-makers in nearly every civilized country of the globe. The New Map of Saxony is one of the best topographical maps extant. Due care has been taken not to overcrowd it by the insertion of detail out of proportion to the scale ; there are numerous altitudes, and the delineation of the inequalities of the ground, in which the principles laid down by Lehmann have been strictly adhered to, may be pronounced to be one of the most successful attempts at representing the varied orographical features of a country on paper. The first sheet of this new map was issued in 1863 ; and, within the short time of ten years, the whole of the work extending over an area of 5,600 square miles was brought to a conclusion, an enduring monument of the skill and energy of the Saxon Engineers.—*Ocean Highways : The Geographical Review*, July 1873.

Italy.

L'Exploration for October 1883 announces that on the 15th October a Geodesial Congress was opened at Rome ; convened for the purpose of trying to establish between the European powers and the United States of America a common meridian.

France is represented at this Congress by MM. Lœvy and Faye ; Switzerland by M. Hirsch ; Germany by M. Fürster ; Spain by General Ibanez.

A certain number of the foreign representatives are going to vote for the Greenwich Meridian, but the French *savants* have been instructed to uphold the choice of that of Paris.

These Congresses have been organised by an Association of *savants*, founded in 1861, their aim being to study and assimilate the great geodesial and astronomical operations as well as those of Physical Geography.

Meetings have already been held at Berlin (1864), Neuchâtel (1867), Vienna (1873), Dresden (1874), Stuttgart (1877), Munich (1880). The Congress at Rome is presided over by Colonel Ferrero. A large number of *savants* and of officials from the different countries of Europe are taking part in the work.

Russia.

L'Exploration for October 1883 tells us that the Russian frigate *Minin* is about to start from the Baltic on a scientific voyage round the world. She has on board a number of Russian *savants* belonging to all branches of science.

The Asiatic Department of the Ministry for Foreign Affairs in St. Petersburg has established a course of instruction in Oriental Languages for officers. The instruction will continue for three years, and officers who avail themselves of it will have afterwards to serve for at least an equal period in the Asiatic military districts of Russia.

In an article entitled "Scobelev as a General and a Man," the Russian *St. Petersburg Gazette* quotes the following remarks which General Scobelev made to the officers of a regiment of Hussars about the character of the

Russian opinion of
German Staff Officers.

"future enemies" of Russia :—"The whole strength of the German army lies in the staff of officers. This, to be just, consists of real heroes. In hundreds they have been killed, and yet they never gave in, but looked from an Olympian standpoint down upon their soldiers, half despisingly like gods."

By Imperial order, No. 72 of 19th June 1883, the 23rd Infantry Division and 23rd Artillery Brigade are transferred to the 1st Army Corps, replacing the 24th Infantry Division, and 24th Artillery Brigade, which take the places of the former in the stations in Finland, and remain unattached to any Army Corps.

The 41st Division is transferred from the Caucasus to the 4th Army Corps (Minsk), together with its Artillery Brigade. It is stationed along the German frontier.

Thus the 4th Army Corps has now three Infantry Divisions and one Cavalry Division, (48 battalions, 18 squadrons and 156 guns on the war footing). This probably explains the recent strengthening of the German garrisons at Lotzen, Lyk, Allenstein, Bromberg, and Thorn.—J. M. G.

Caucasus.

Changes in the disposition of the Russian troops in the Caucasus.

THE 41st Division (16 battalions with 24 guns) has been withdrawn from the south to the north of the Caucasus, also the whole of the Dragoon Division.

Thus now the 19th, 20th, 21st, and 41st divisions are all quartered north of the Caucasus, together with the Dragoon Division. These form the 2nd Army Corps. The apparent reason for this is, that they may be brought more quickly to an European theatre of war by the railway from Vladikavkas.

Of the stations occupied by the recently moved troops little is known, except that the entire artillery of the 41st Division is in Vladikavkas, together with two other brigades of field artillery, making a total of 72 guns on the peace strength, (144 in war).—J. M. G.

In the *Journal of the Royal Geographical Society*, p. 411, Vol. VIII, the following information is given :—

F. G. Struve's Astronomical Positions in the Caucasus and Asia Minor.

No.	Name of Place.	Locality.	Latitude, North.	Longitude East of Greenwich.
	Tiflis ...	Height in the Governor's Garden.	41° 41' 40"	44° 50' 39"
		A place near it, south of the Catholic Church.	41° 41' 27.4"	
	Piatigorsk ...	Alexander's spring ...	44° 2' 39.3"	43° 5' 8"
	Kislovodsk ...	Centre of fort ...	43° 54' 21.0"	
	Tsar'skiye Kolodtsi	.....	41° 27' 57.7"	
	Jar or Novaya Zakatali.	.....	41° 37' 40.6"	
	Nukhi ...	.....	41° 11' 46.3"	

No.	Name of Place.	Locality.	Latitude, North.	Longitude East of Greenwich.
	Akhátsikh ...	2nd Gate of Citadel.	41° 39' 4·7"	
	Kars ...	Fort of	40° 37' 1·7"	43° 9' 2"
	Ardahán ...	Caravanserai near the fort.	41° 7' 15·9"	42° 48' 24"
	Gumri ...	Lazaretto Surgery ...	40° 46' 57·6"	43° 46' 54"
	Hasan-Kala ...	.....	39° 58' 47·4"	
	Erzurum ...	.....	39° 55' 16·1"	41° 18' 31"
	Baiburt ...	.....	40° 15' 36·5"	40° 8' 48"
	Kalkitchtlik ...	.....	40° 8' 2·6"	39° 10' 23"

Federoff's determinations of Ararat.

Ararat ...	Point of Little ...	39° 39' 10·68"	44° 24' 31"
Ditto, Great ...	Foremost point of ...	39° 42' 24·17"	44° 17' 53"
Ditto, Great ...	Rearmost point of ...	39° 42' 21·94"	44° 17' 38"
St. Jacob ...	Convent of ...	39° 46' 12·10"	44° 21' 53"
Bajad ...	Village of ...	39° 52' 38·78"	44° 31' 5"
Alagatz ...	Point of hill ...	40° 31' 35·65"	44° 11' 23"

Population of the Province of Kars, Russian Armenia, according to information taken from the Kars and Kavkaz Gazettes.

Turks ...	39,099	These include—		
Armenians ...	31,518	Sunni Mussulmáns	... 78,918	} 90,530
Kurds ...	21,453	Shiah ditto	... 11,612	
Kárapapakhi ...	21,121	Armenian-Gregorians	... 30,656	} 30,664
Greeks ...	15,666	Gipsy-Gregorians	... 8	
Russians ...	7,928	Orthodox Russo-Greek Church	... 15,873	} 15,873
Turkumáns ...	7,754	Sect of the Molokanis	... 5,333	
Osetians ...	382	Ditto Heretics	... 2,016	} 7,405
Aisors ...	245	Ditto Judeists	... 39	
Lesgians ...	139	Ditto Jumpers	... 17	} 743
Gypsies ...	73	Armenian Catholics	... 734	
Persians ...	13	European do.	... 9	} 128
Gruzinians ...	9	Armenian Protestants	...	
Ajarians ...	6	Jesuits	...	69
Kumukhs ...	6			
Total	145,412			145,412

I. R. G. S. Proceedings No. I of 1883.

Trans-Caspian Rifle Battalions.

The following are not entered in the latest edition of Armed Strength of Russia as corrected to 1st April 1882:—

- 1st Battalion (from Local Krásnovodsk Reg.),
Krásnovodsk (Fort.)
- 2nd Battalion (1st Oren Reg.),
Geok-Tepe (Gok-Tapa)
- 3rd Battalion (2nd Oren Reg.),
Askábád.
- 4th Battalion (5th Caucasus Reg.),
Chikishlár.
- 5th Battalion (6th Caucasus Reg.),
Bámi.
- 6th Battalion (7th Caucasus Reg.),
Askábád.

Trans-Caspia.

In *L'Exploration* for October 1883, the French text of a letter from Mr. Lessar appears. Mr. Lessar writes from Askábád, under date 16th June, to the Russian Geographical Society,* to say that he has explored the old channel of the *Onguz* (the Chaharjui Daria) of which the upper course is not known. The Tekkes themselves are ignorant of the route to the east of Mirza Chahal (Mirza-Chile).

Mr. Lessar describes his expedition as a difficult one, the more so because the bed of the Onguz being very indistinctly marked, his party several times lost its way. The *kaks* or rain-water pools were dry, for no heavy rain had fallen during the month of April. Mr. Lessar has succeeded in reaching Kabakli, whence he went to Khiva. He then returned to Askábád *via* Mirza-Chahal.

At the time of writing Mr. Lessar was ill, and not able to continue his explorations.

In the beginning of December 1882 (O. S.) Mr. Lessar returned to Askábád where he passed the winter. Between April and December of the same year, he made several journeys into the steppe for the purpose of exploring the little known and indeed a portion of the perfectly unexplored country to the south and east of the newly conquered Akhál-Tekke Province. The object of these journeys was to clear up, by certain inquiries, matters relating to the Aral-Caspian depression.

The following is a brief epitome of Mr. Lessar's journeys:—

I.—From Askábád *via* Sarakhs to the country between the Hari-Rud and the Murgháb, through the Herát valley, the Province of Kusan and on to Gurian. Thence *via* Khaf and Turbat-i-Haidari to Mashad. From Mashad *via* Turbat-i-Sheikh-i-Jám to Káfir-Kala. Thence due north *via* Zurábád to Sarakhs along the course of the Hari-Rud. The chief object of this journey was to explore the roads from Askábád southwards.

II.—The second journey lay through Daragaz, Kalát and the Hazár-Musht pass to Mashad. Thence to Zurábád. From here Mr. Lessar made several journeys in various directions between the Hari-Rud and the Murgháb in order to clear up the geography of this part of the country. Thence he went to Sarakhs visiting *en route* Niázábád and Sheitli and so on to Marv. From Marv he struck the Amu-Daria a little to the north of Chaharjui. Thence he descended the river to Khiva, reaching Fort Durun, in Akhál, *via* Izmukshir and Charishli.

III.—In October 1882 Mr. Lessar, having been joined by Captain Máloff, of the Corps of Topographers, carried out barometrical levelling of the country between Askábád and the Tajand (coming out at Ana-Uaz-Jangal and Alaman Jangal). The levelling observations were taken every 6 *versets* (4 miles) with all the barometers (one of them was an aneroid).

IV.—By invitation of Maili Khán, of the Sitchmaz tribe of Turkumáns, Lessar visited Marv for the second time during October 1882. On his return on this occasion he was able to describe the roads (a) *via* Dushak and Kara-Bent to Marv and (b) from Marv *via* Dash-Rabát, Sheitli, Hauz-i-Khán and Kaushid-Kala to Sarakhs.

V.—In November and December of the same year, Mr. Lessar went over the mountains of Kalát and Daragaz and the Atak, being principally interested on this occasion with the question of the water-supply and the state of the irrigation in the country.

Thus between April and December 1882 Mr. Lessar traversed more than 5,000 *versets* (3,333½ miles) and in the interval between his successive journeys was scarcely able to rest from the preparation of his official reports and other duties.

* Mr. Lessar's letter appears at length in the *Isoetiya* of the I. R. U. S.

The map of the whole of the country which he has visited is ready and will appear in a short time.—(I. R. G. S. *Proceedings* No. 1 of 1883.)

Mr. P. M. Lessar's survey of the Onguz or the Chaharjui-Daria.

Mr. P. M. Lessar, in a letter addressed to the Secretary of the I. R. G. Society, dated Askábád

4th
18th

June 1883, communicates, amongst other information, the following:—

"On the ^{25th May}_{8th June} I returned to Askábád, having traversed the whole length of the Onguz from Bala-Ishem to Kabakli. Thence I set out for Khiva and from Khiva proceeded *via* Mirza-Chile to the Tajand and so on to Askábád.

The source alone of the Onguz (the so-called Chaharjui-Daria) has hitherto been approached by travellers from the west: so that the greater portion of it is only known from enquiry. Of the road too from Khiva to Askábád we have only very recent information. Accordingly in the beginning of April of this year (O. S.) I proposed to the Commander of the Forces in the Trans-Caspian Province that I should follow the two directions indicated for the purpose of describing and surveying them, and that I should carry out a barometrical levelling of the Onguz. When the observations of two observers give like results, the latter may be said to be fairly accurate. In my case, moreover, former points ascertained with fairly accurate levelling were available as checks. The Commander of the Forces acceded to my request, appointed as my escort 10 Tekke militiamen and permitted Sub-Lieutenant Khabáloff of the 6th Trans-Caspian Rifle Battalion to accompany me and to carry out observations with a second barometer.

Mining Engineer Konshin,* who was at Kizil-Arvat for the purpose of supplying the Trans-Caspian Railway with naphtha, hearing of our intended journey, joined us. The work entrusted to him was quite separate from ours and he will tell you of it himself. His commercial affairs did not allow of his traversing the whole length of the Onguz, so that he returned after examining but one 1/3rd of it. The point of his return was between Dagil and Mirza-Chile (about 1 1/2 days' journey short of the latter). The stretch of country from Bala-Ishem *via* Shiik to Mirza-Chile has, as I have stated above, been visited by travellers. Thus Kalitin, the topographer who accompanied the expedition for the exploration of the Onguz, and Shatikhin have both been over it. But from Mirza-Chile the Tekkes themselves do not know the road eastwards. Several times we went astray, on account of the slight trace of the bed of the Onguz and on each occasion we had to wend our way back again. But towards the end of April (O. S.) we managed our business and by the help of rain-pits reached Kabakli in safety. Thence we passed on to Khiva.

During the whole of our April operations there was no fall of rain so excessive as to completely fill the rain pits which are locally called *káks*. Our position was a very difficult one, transport was limited, for it would have been impossible to have traversed the 130 *versets* (86 1/2 miles) of waterless country between Khiva and the Tajand *via* Mirza-Chile with any large amount. We therefore divided. Sub-Lieutenant Khabáloff took the high road *via* Bala-Ishem and Bámi to Askábád and I went *via* Mirza-Chile. I subsequently became aware how wisely we acted as we did; for out of seven horses I lost four. I only got back to civilised life with one guide and one of the Tekke guard. For the others I had to send camels laden with water, but happily no man was lost. I succeeded in making a survey the whole way to the Tajand.

I am very much knocked up and I feel very bad and quite unable to continue my travels, at least for a time. (I. R. G. S. *Proceedings* No. II of 1883).

* This I fancy is the same person who took a caravan to Marr.—*Trans.*

Operations of the Military Topographical Section of the Russian General Staff during the year 1882.

The triangulation of the Trans-Caspian Province is being continued. Up till now 60 trigonometrical points have been fixed. For this triangulation a true base $3\frac{1}{2}$ *versts* ($2\frac{1}{2}$ rd miles) long has been measured off near Fort Bámi and its *azimuth* determined.

The survey of the Trans-Caspian Province is being carried on by two parties, one of which works principally eastwards, the other to the west of meridian $75^{\circ} 19'$.

Last year's (1882) survey of the eastern section reached as far as the meridian of Chaacha. From here the country as far as the Persian fort of Sarakhs was mapped out. Lutfabad, Kaakha, Chahar-Deh, Miana and Chancha, the position of which was fixed during the previous year's observations, served either as trigonometrical or as astronomical points.

The same section has mapped out 18,640 square *versts* (12,426 $\frac{2}{3}$ rd square miles) on a scale of 2 *versts* ($1\frac{1}{2}$ rd miles) to the inch.

The western section has continued, on the same scale, the survey along the Russo-Persian frontier from Mount Masineff to the uplands of the Garm-ab-Su and as far as the abandoned fort of Chát. The country surveyed embraces an area 252 *versts* (168 miles) long by 20 *versts* ($13\frac{1}{2}$ rd miles) wide. By the same section and on the same scale (2 *versts* or $1\frac{1}{2}$ rd miles to the inch) a survey was carried out of the Akhal-Tekke *oasis* between Fort Gok-Tapa and the village of Archman as well as Persian territory reaching to the neighbourhood of Bujnurd. Notwithstanding the unfavourable conditions for operations, for instance waterless localities and the extreme difficulty of obtaining supplies and forage, &c., an area of 9,130 square *versts* (6,086 $\frac{1}{3}$ rd miles) was surveyed.

Apart from the above-mentioned survey, Captain Tolmacheff plotted, on a scale of 2 *versts* ($1\frac{1}{2}$ rd miles) to the inch, the country from Chikishliar post and along the Caspian littoral as far as Fort Mulla-Kara, at the mouth of the Kara-Su, and thence up the Atrak to Chat (an area of 4,830sq. *versts* or 3,220 square miles.)

Thus during the year 1882 there was completed a survey of the entire country between the Trans-Caspian Province and Persia, an extent embracing 592 *versts* (394 $\frac{1}{3}$ rd miles). In 1883 the delimitation of the frontier line will be entered upon, in accordance with the terms of the treaty concluded between the Russian and Persian Governments at Teheran on the 9th December 1881. I. R. G. S. *Proceedings* No. 1 of 1883.

Astronomical labours of Captain Gladisheff in the Trans-Caspian Province and in Persia.

With the permission of the Military-Topographical Section of the General Staff, we are able to acquaint our readers with the results of the chronometrical observations of Captain Gladisheff in the Trans-Caspian Province and adjacent localities which up till now have scarcely been explored in a geographical sense.

Geographical position of astronomically determined points in the Trans-Caspian Province and adjacent parts of Persia, fixed during the years 1881-81 by Geodesist Captain Gladisheff, and communicated by him with the permission of the Military-Topographical Section of the General Staff.

POINTS	NORTH LATITUDE.	LONGITUDE EAST OF PULKOFF.			LONGITUDE EAST OF GREENWICH.
		Time.	Degrees.	Probable error.	
1. Kisil-Arvas (Akhál). Centre of fort ...	Dg. M. S. 38 59 7.9	Dg. M. S. 1 43 47.07	Dg. M. S. 25 56 46.06	+ 0° 211	Dg. M. S. 56 16 26.10
2. Rámi (Akhál). North-ern mound in front of fort ...	38 44 9.0	1 45 50.04	26 37 30.60	+ 0° 260	56 47 10.65
3. Archman (Akhál). New fort ...	38 31 55.5	1 47 23.37	26 50 50.55	+ 0° 272	57 10 30.60
4. Durun (Akhál). Old mosque ...	38 23 11.2	1 48 26.12	27 6 31.80	+ 0° 275	57 26 11.85
5. Gok-Tapa (Akhál). Dangil-Tapa hillock.	38 10 41.1	1 50 33.00	27 38 15.00	+ 0° 289	57 57 55.5
6. Askábad (Akhál). Citadel ...	37 56 43.4	1 53 13.15	28 3 17.55	+ 0° 241	58 23 57.80
7. Má mud-ábád, a town in Khurásán. The Khán's house outside the city ...	37 26 50.9	1 55 9.17	28 47 17.55	+ 0° 363	59 06 57.60
8. Kuchán, town in Khurásán. Said Khana ...	37 8 39.6	1 53 16.01	28 4 0.15	+ 0° 364	58 23 40.20
9. Shírván, town in Khurásán. Palace of the Khán ...	37 23 51.9	1 50 21.82	27 35 27.30	+ 0° 269	57 55 07.35
10. Rujnurd, town in Khurásán. Pillar of the Khán's new house	37 29 10.1	1 48 0.98	27 0 14.70	+ 0° 390	57 19 54.75
11. Bagdamur, fort in Khurásán. Centre of fort ...	37 28 38.5	1 48 55.91	27 13 58.65	+ 0° 485	57 33 96.70
12. Darbandi in the Province of Kuchán (Persia). Point close to village ...	37 14 56.8	1 54 14.83	28 33 43.45	+ 0° 350	58 53 22.50
13. Loin in the Province of Kalát near the river and at the entrance into the village from the side of Má mud-Ábád ...	37 4 1.4	1 56 18.23	29 4 33.30	+ 0° 364	59 24 13.35
14. Ig dali, Province of Kalát, tower on a hill near the village ...	37 3 58.8	1 56 54.98	29 13 44.7	+ 0° 392	59 33 24.75
15. Kalát, Magbára tower ...	37 0 7.5	1 57 46.26	29 26 33.90	+ 0° 409	59 46 13.95
16. Kozgán (Atak) Citadel ...	37 22 11.8	1 56 34.92	29 6 13.80	+ 0° 388	59 25 53.85

POINTS.	NORTH LATI- TUDS.	LONGITUDE EAST OF PULKOFF.			LONGITUDE EAST OF GREENWICH.
		Time.	Degrees.	Probable error.	
17. Intrábád (Persian Atak). The Khán's palace ...	Dg. M. S. 27 31 25.8	Dg. M. S. 1 56 3 56	Dg. M. S. 29 0 53.40	+ 0° 363	Dg. M. S. 59 20 37.45
18. Kasakha (Atak) West angle of fort ...	37 21 17.6	1 57 9.80	29 17 27.00	+ 0° 400	59 37 7.5
19. Dushák (Atak) (Cha- har-Deh). stream near the fort ...	37 9 5.3	1 58 38.33	29 39 35.60	+ 0° 475	59 59 17.56
20. Arva-Nok Kala (Atak). Centre of fort ...	36 46 24.0	2 0 53.00	30 13 15.00	+ 0° 630	60 22 55.5
21. Sarakhs (Persia) West angle of Fort ...	36 32 14.5	2 2 22.63	30 50 39.60	+ 0° 635	61 10 19.6
22. Musarín-Kala (Persia). North-west tower of fort ...	36 9 44.4	2 0 53.49	30 18 22.35	+ 0° 620	60 33 0.25
23. Yalín-Kala (Persia). South-west Angle of fort ...	36 15 34.4	1 59 59.01	29 59 45.1	+ 0° 674	60 19 25.30
24. Mashad (town of). Onpola of the Imám- Kisa ...	36 17 25.6	1 57 11.10	29 17 46.5	+ 0° 591	59 37 26.5
25. Tavarik (Province of Kuchán). Top of a mound near the vil- lage ...	37 11 23.0	1 53 34.41	28 23 36.1	+ 0° 509	58 43 16.20
26. Yangi Kala (Pro- vince of Kuchán). Gates of the fort ...	37 44 51.1	1 49 33.30	27 23 19.60	+ 0° 313	57 43 59.55
27. Tesehent Dam on the river Tajand ...	37 37 57.0	2 0 11.67	30 2 55.05	+ 0° 414	60 22 35.10
28. Karibent on the river Tajand. Centre of fort ...	37 25 6.0	2 0 59.96	30 14 59.30	+ 0° 468	60 34 39.45
29. Márv cultivated land near Kaushid- Khán-Kala ...	37 36 18.3	2 5 50.42	31 27 36.3	+ 0° 469	61 47 16.35
30. Konlar wells in the sands of Akhái-Tekke. Centre of a hollow ...	38 8 40.5	1 51 23.95	27 50 59.25	+ 0° 265	58 10 39.30
31. Nasr-Kuli wells (Akhái). Near the ruins of a mud fort ...	38 33 27.7	1 52 6.46	28 1 36.90	+ 0° 280	58 21 16.95
32. Kandimli (Akhái). North-east corner of a hollow ...	38 46 58.2	1 52 14.44	28 3 36.60	+ 0° 327	58 23 16.5
33. Yanik wells (Akhái). North-west corner of a hollow ...	38 53 32.2	1 52 32.57	28 8 8.55	+ 0° 361	58 27 43.60
34. Chaljik wells (Akh- ái). Melon beds in the vicinity ...	38 44 22.4	1 51 28.50	27 52 7.50	+ 0° 342	58 11 47.55

POINTS.	NORTH LATITUDE.	LONGITUDE EAST OF PULKOFF.			LONGITUDE EAST OF GREENWICH.
		Time.	Degrees.	Probable error.	
35. Kooba-Kák wells (Akhá). Centre of hollow ...	Dg. M. S. 38 48 1.9	Dg. M. S. 1 49 49 18	Dg. M. S. 27 27 17 40	+ 0° 411	Dg. M. S. 57 46 57 45
36. Matir wells (Akhá). Centre of brick built fort ...	38 37 25.1	1 48 18 48	27 4 27 20	+ 0° 309	57 24 17 25
37. Nawroz-ábád (Persia). Gates of fort ...	38 16 30.8	2 3 27 16	30 51 47 40	+ 0° 657	61 11 27 45
38. Pul-i-Khátun (Persia). Centre of bridge ...	35 58 9 7	2 3 12 47	30 48 7 05	+ 0° 690	61 07 47 10
39. Zurábád (Persia). South-west tower of new fort ...	35 42 30 8	2 3 6 00	30 46 30 0.	+ 0° 840	61 06 10 5
40. Turbat (Persia). Grave-yard ...	35 14 47 3	2 1 12 35	30 18 12 75	+ 0° 836	60 37 52 30
41. Musi-ábád (Persia). North face of fort ...	34 54 20.4	2 1 58 12	30 29 31 30	+ 0° 887	60 49 11 35
42. Malik Hairan Chaabma or spring ...	35 46 59.0	2 4 18 32	31 4 42 30	+ 0° 802	61 24 22 5

The determination of the time and of the latitude was effected with Repsold's Vertical Circle by measuring the relative zenith distances of the stars. In order to ascertain the latitude, two stars, north and south, with the same relative zenith distances, were selected and for the time I chose two stars out of the list given by Colonel N. A. Tsinger, and enlarged their intervals to 25 minutes. The litters in use for carrying wounded men served for the carriage of the five table chronometers, necessary for the determination of the longitude.

(I. R. G. S. *Proceedings*, No. 2 of 1883.)

Russia.

*Extract from the Journal of the Military Service Institution of the United States.**

"THE waist-belt is a narrow, black belt, with black buckle, supporting two stiff cartridge boxes with sharp edges and with covers that open towards the body. No bayonet scabbard is used with the field equipment.

New Equipment for the Russian Infantry.

"The knapsack has been abandoned; it was found to be too heavy during the last war, and is replaced by two valises or pouches. One for clothing and ammunition is suspended from the right shoulders, the other for provisions from the left. The pouches and turn-straps are of gray canvas. A wooden water-flask is suspended from the right shoulder, and rests on the clothing valise. The cape, formed into a roll, has its ends fastened into a small camp kettle, and is carried over the left shoulder. To the rear part of this roll are fastened a piece of shelter tent, one tent-pole

* The following soldierly appeal appears on the title page of this Journal:—"I cannot help pleading to my countrymen, at every opportunity, to cherish all that is manly and noble in the military profession, because peace is enervating and no man is wise enough to foretell when soldiers may be in demand again."—(General Sherman).

and a pouch containing one pair of high boots. 80 Linneman spades and 20 small axes are carried by each company in the field. These tools, protected by leather caps, are suspended from the waist-belt in rear of the left hip."

The stables offered nothing of interest. They are narrow and dark and should be rebuilt. The horses are separated by moveable poles wrapped in straw, and the food is served in a wooden trough which runs the whole length of the stable in front of the horses, and is divided into two compartments, opposite each horse—a small compartment for oats and a larger one for hay. The ration consists of about three gallons of oats and ten pounds of hay. The hospital stables, on the contrary, deserve the highest praise. There are three—one for wounds, and the others for diseases, one being for epidemic diseases. The stall floors are asphalt, over this is a loose floor of planks laid across the stall, with intervals between the planks sufficient for the escape of the urine. The planks are laid on rests so that a vacant space is formed between the upper and the asphalt floor. A small water-pipe is laid along the outer wall of the stable, just under the edge of the moveable plank floor. This pipe is pierced with small holes throughout its length, through which water percolates and washes the floor. The roof is also provided with capacious ventilators. By these means the air in the stables is kept so pure, that if a person were introduced into one of them in the dark, he could not tell where he was by the sense of smell alone. They seem to be good expedients in the service of hygiene and are worthy of imitation.

In describing the barracks, he says:—"The beds are covered with red blankets, and I cannot avoid mentioning my surprise at the high piles of pillows encased in clean linen pillow-cases, which were found on some of the beds. The explanation is simple. Each soldier is furnished with a blanket and one pillow, and each man procures as many additional pillows as his means will allow. The number of pillows on the bed merely indicates the wealth of the owner: hence, when one sees six pillows piled up to the height of four feet, it does not follow that the owner prefers to sleep in a sitting posture. On the contrary, he burrows his head between the lowest pair.

"Dinner was just ready when I entered one of the kitchens and I embraced the opportunity of tasting the different courses. These consisted of boiled fresh beef, white cabbage soup, buckwheat mash, stale black bread and *quass*. I asked what was served on other days of the week, and was answered that the bill of fare is always the same, except on fast days.

"The food looked and tasted well, qualities which it ought to have when prepared by cooks who have no temptation to try experiments. Supper consists of cabbage soup or *mash*. During leisure moments the soldier prepares his own tea."

Caucasus.

Extract from Revue Militaire de l'Etranger, rédigée à l'état, Major-Général du Ministre de la Guerre (Deuxième Bureau) No. 588, 15th Décembre 1883, pp. 703-704.

"The organisation of reserve troops adopted in 1881 in the case of the conscription for both Russia in Europe and Russia in Asia (see *Revue Militaire*, No. 561 of 1882) is to be applied to the military conscription of the Caucasus by an Imperial Decree bearing date the 18th November, last which makes the following dispositions:—

"Six cadre reserve battalions, numbered from 1 to 6, have been formed.

Augmentation and re-organisation of the Caucasus Local Troops.

They are stationed as follows: 1st at Stavropol, 2nd at Piatigorsk, 3rd at Géorgievsk, 4th at Groznyi, 5th at Tiflis, and the 6th at Alexandropol. They are intended to replace the fortress battalion at Alexandropol, the local battalion at Tiflis and the local detachments at Stavropol, Piatigorsk, Géorgievsk and Groznyi which are to be broken up.

"The 5th, 6th and 7th Caucasus frontier-battalions have been transferred to the Trans-Caspian Province, whilst the 1st, 2nd, 3rd, and 4th of the same category have been transformed into local battalions stationed along the Terek, in Daghistán, at Soukhoun and Batoum respectively. A new battalion is to be created for Erivan. In consequence of these changes the Caucasus conscription will not comprise a single frontier-battalion. As concerning the other local detachments of the Caucasus, many have had their effective strength modified, whilst some have been altogether disbanded."

Siberia (Eastern).

Creation of a 2nd brigade of Chasseurs for Eastern Siberia.

"AN Imperial decree bearing date 12th November orders the creation of a new brigade of *Chasseurs* in the military conscription of Eastern Siberia."

"This brigade, 4 battalions strong, with numbers from 5 to 8 inclusive, will bear the title of the *2nd Brigade of Chasseurs of Eastern Siberia*, and will serve to aid the armed troops already stationed in the above circle of conscription.

"No. 1. battalion of *Eastern Siberian Chasseurs* will become No. 5.

"No. 4 Frontier battalion of Eastern Siberia will become a *Chasseur* battalion, and will take the number 6, and hence Frontier battalion No. 5 will become No. 4.

"The 1st, 7th and 8th battalions of *Chasseurs* of the new formation will have as a nucleus a company taken from the 1st, 3rd and 4th battalions respectively and the full strength will be added according to instructions issued by the Chief of the Staff.

"The staff complement and of the rank and file of the 2nd Brigade will be similar to that of the 1st."

The result will be that the number of *Chasseur* battalions of the Russian Army will be as follows:—

			<i>Battalions.</i>
1	Brigade of <i>Chasseurs of the Guard</i>	...	4
5	" " " <i>Line</i> ...	...	20
1	" <i>Caucasus Chasseurs</i> ...	...	4
1	" <i>Turkistan Chasseurs</i> ...	...	4
2	" <i>Eastern Siberian Chasseurs</i> ...	...	8
	<i>Trans-Caspian Chasseurs</i> ...	...	6
	<i>Finland Chasseurs</i> ...	...	8
	Total	...	54

Sweden.

Journal of the Military Service Institution of the United States, No. XV, Vol. IV.

"Our Exchanges, *Kon. Krigsvetenskaps Akademiens Handlingar och Tidskrift* (Stockholm) contains, among other professional papers, the following "*Soldier's Handkerchief*."* In this is described and recommended a handkerchief for military instruction, proposed by a Lieutenant of the Swedish Army, several varieties of which have been manufactured. The last series,

*Translated by Lieutenant Eric Bryland, Corps of Engineers.

numbered 4, contains orders and instructions relating exclusively to guard and outpost duty. Along the edges are given sketches illustrating different aspects of outpost duty, with descriptive text, which includes the ordinary duties of soldiers on outpost. The corners contain diagrams of the formation of the outpost on the march. In other parts of the handkerchief are given four well-executed pictures of soldiers firing in different positions. These handkerchiefs are printed in fast colours and cost about 15 cents.

Asia Minor.

Professor V. Vunsh's journey into Kurdistan. (Mittheil. d. K. K. Geogr. Gesellsch. in Wien. B. XXVI, No. 2, 1883).

On the ^{6th}/_{18th} June 1882 Professor Vunsh set out from Khar-

Professor V. Vunsh's journey into Kurdistan.

put across the river Murád-Su to Pertek. He then visited Masgirt and came to Khozat. He was unable to go to Egin on account of the frequent Kurdish raids. His onward route lay through Peri, Palu, Chevlik, to Chabaksur, where he came across a Turkish *Mudir*. From Tseolok he went eastwards *viâ* Hemik-Kêprus and Chalta-Kêprus to Surp-Karabet. Thence *viâ* Abarat-Su to Mush, from there *viâ* Hens to Erzerum. The whole route was carefully sketched by Dr. Vunsh. In the beginning of September (O. S.) a trip was undertaken to Van. Mount Bingel-Dâgh was avoided. This elevation presents the appearance of a high plateau with scarcely perceptible hillocks. Dr. Vunsh remarks that it is difficult to imagine the height of it to be 12,000 feet. Thence the Doctor went *viâ* Hens, Gum-Gum, Mush, Bitlis and along the south shore of Lake Van to the town of Van. Thence his route lay *viâ* Arnis-Ardish towards the valley of Tuzla-Chai and *viâ* Ak-Dâgha and Aras to Erzerum where he arrived on the ^{18th}/_{30th} October 1882. At Van he collected much detailed information about the source of the Eastern Tigris. It is known that in the neighbourhood of Salakhana there is an inscription, not yet seen by a European, which covers an area of four square metres. From Erzerum Dr. Vunsh intended to start for Tiflis and Erivan whence he was to undertake the exploration of Russian Armenia and from there to return to Van, and whilst there he hoped to decipher the Salakhana inscription. Then he proposed to visit the country about the sources of the Eastern Tigris, and to endeavour to get as far as Dersim, a country perfectly unknown to Europeans.—(*I. R. G. S. Proceedings*, No. I of 1883.)

Persia.

Dr. Polak's expedition to Karagan and Elvend in 1882. (Mittheil. d. K. K. Geogr. Gesellsch. in Wien. B. XXVI, No. 2, 1883.)

The members of the expedition were: Chief, Dr. Polak, Geologist, Dr. Vener, and Collector of plants, Pikler. The objects of the expedition were to thoroughly explore the countries visited, and especially the lower portions of the two mountain chains which stretch between Elburz and Elvend. One of these runs west of Zinjân and almost parallel with the Elburz chain, reaching as far as Teheran-Kages where in places it joins on to the Karagân mountains. The expedition set out from Vienna for Odessa, Poti, Tiflis, Baku, Salyani and so into Persia. The author gives short accounts of the towns within Persian limits, but these are without any special interest. The first Persian town which he describes is Enzelli, the next is Peribazar, where fishing on a large scale is carried on. From Peribazar the expedition proceeded to Resht, the chief town of the province of Gilân. The author ob-

serves that the soil of Gilán is particularly fruitful, in consequence of the deposit left by the gradually receding Caspian. The species of trees, both fruit and timber, in this province are very varied, but in the case of the fruit trees the yield is indifferent. Wild animals are plentiful. The onward route of the expedition lay along the largest river of Persia, the Kizil Uzin or Sufaid-Rud^o and so it reached Rudbár, where layers of coal are met with, and in these were discovered beautiful fossil specimens. The expedition passed through the small town of Manshil, peopled by Davudi, a sect of Assassenites, and thence cut across the Kasvin steppe which was found to be practicable for a line of railway. Thence the route lay through Karagán and on to Hamadán. In the Karagán mountains cotton is met with at a height of 5,500 feet, and the vine grows at an altitude of 6,000. The Kuhharmeni mountains near Kebuteshan were visited by Europeans for the first time. Here, as in the adjoining environs of Hamadán, dwells a Turkish tribe, a branch of the Karagotsli, which is divided into three clans under one chief who dates his lineage from Tamerlane. The Armenians in this part of the country are of two types, the fairer being short-headed and the darker long-headed. Dr. Vener went to the top of Elvend, but was unable on account of a storm to take any observations. The expedition rode round Elvend and through Malajir (the ancient Burujir), Nejavend, and Kengevar and thence returned to Hamadan. From here the party proceeded home *vid* Teheran, Meshed-i-Sir, Astrakhan Tsaritsin, and so on to Vienna.—(*I. R. G. S. Proceedings*, No. 1 of 1883.)

Central Asia.

HITHERTO such communication has passed through Catherineburg, Omsk and Semipalatinsk, with several breaks *en route*. Now the establishment of a line of telegraph between Perovsk and Orsk *vid* Kazalinsk permits of the getting rid of such an inconvenient route as that above indicated, so that in future telegraphic communications between Turkistán and Europe and *vice versa* will pass through Orenburg (the head office) over a length of line measuring 1,900 *versets* (1,270 miles) without a break.—*Messageur Officiel* copied into *L'Exploration*, No. 363 of 1884.

IN the November and December (1883) Nos. of the *Voyenni Sbornik* (Russian Military Magazine) appears an article by *Gospodin* H. Arandarenko, entitled "Darwáz and Kárategin, an Ethnographical Sketch."

This author has before given us valuable information relating to this comparatively unknown, yet most important, portion of Central Asia, and he now adds to our knowledge matter of great interest extending over 37 pp. 8vo.

The Russian writer's account is concluded with what seems to be a very complete list of the inhabited localities of the countries treated of. This list is arranged so as to show the names of the settlements, the number of houses contained in each and their relative positions (right or left bank) on the particular stream, which marks the communications between the several populated parts of the country.

Afghán-Turkistán.

FROM Dr. A. E. Regel two short letters have been received from Bar-Panja, dated respectively ^{8th} 20th December 1882 and ^{12th} 24th January 1883. In the former Dr. Regel

* This surely is a mistake, since *Kizil* means red and *Sufaid* signifies white.—*Trans.*

communicates to us that he has visited Lake Shiva and also the Khund and Sháh-Dara valleys. In the second letter, that he has traversed the whole of Shignán, from Roshán to Gorán and got as far as the Jishán-Kuz pass (the Jogingaz of the English). Whilst doubtful of his being able to penetrate to Badákshán, Dr. Regel is the more regretful inasmuch as his existing information about that country is in many places not authentic.—*I. R. G. S. Proceedings*, No. 1 of 1883).

Class Topographer Kosyákov, who commanded the scientific expedition, inaugurated by the traveller, Dr. Regel, to Darwáz and

Topographer Kosyákov's and Dr. Regel's exploration of Shignán, &c.	Shignán, set out from Panjkand on the 4th 16th June 1882. After arriving at Kára-Tagh in Hisár, by way of the Nur pass, the expeditionary party divided. Doctor Regel went by a mountain road to Baljuán, whilst Mr. Kosyákov descended the river Kára-Tagh to Kobádián whence he came out at Kala-i-Khum <i>via</i> Kurgán-Tapa and Kuláb. From the latter place Kosyákov continued his explorations up the river Panj as far as Fort Wanj and thence up the river of that name which he followed to its source. On his return to Kala-i-Khum he went northwards to Fort Tavildara on the river Wakhsh (Khuliás) and thence along the right bank of that river to Kurgán-Tapa. Having explored the highlands of the Ak-Su, Kosyákov came to Kala-i-Khum, whence he was summoned by Dr. Regel for a joint exploration of Shignán. This expedition, however, never came off, as the ruler of Shignán has for a long time past refused permission for the exploration of his country. Subsequently Kosyákov got ill and was obliged to hasten his return to Samarkand. Proceeding from Kala-i-Khum to Talvar, down the course of the Ak-Su and to Fort Saripul, Baljuán, Dushambe, Dinán and Baisun, Kosyákov continued his itinerary survey to Yár-Tapa where, his sickness having become most severe, he was compelled to give up work. From Yár-Tapa Kosyákov returned to Samarkand <i>via</i> Shahr-i-Sabz. During his itinerary he surveyed about 1,400 <i>versts</i> (933½ miles).—(<i>I. R. G. S. Proceedings</i> , No. 1 of 1883).
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China.

THE following regarding the population of China is taken from "L'Exploration" for October 1883:—

According to a Dr. Happer the population of China, instead of amounting, as generally believed, to the enormous figures of 400,000,000 souls, does not exceed 280,000,000. Dr. Happer remarks that 50,000,000 Chinese perished at the time of the Taiping rebellion, whilst another 20,000,000 disappeared during the famines which ravaged the north of the Empire two years ago during the Mahometan outbreak in the northern provinces.

Emigration too of adult and strong men cannot but contribute to the depopulation of the empire, an emigration which continues and increases with each year.

Mr. Hippisley, who is attached to the Imperial Customs, and who has studied the subject, also believes that the Chinese Empire does not contain more than 250,000,000 inhabitants. He asserts that the last census of the province Chekiang shows that the population has decreased 60 per cent.

If, in fact, it be true that the greater part of the 18 provinces of China are thickly populated, it is not less certain that there are immense tracts to the north and west of the Empire which are but immense solitudes.

Under such conditions, supposing that the Chinese Empire can count on from 60 to 80 millions of able-bodied men, how many of these can really be embodied in the army? Not more than 100,000 men. We think, too, that it would be very difficult for a Government like that of Peking to arm on the

European system 100,000 men, and to provide that force with a proportionate amount of artillery, a rule which is observed in Europe.

Those before whom the phantom of Chinese power appears are the same people who are still ignorant of things Asian, and who are unaware that the Celestial forces are wanting in Intendance, and that in China there are no roads by which troops can be marched from point to point.

China took five years to put down a local rebellion, and to do it, she had to call to her aid an English General (*Temps.*)

The *R. E. Journal* of 1st November 1883, contains the following letter from Major-General C. G. Gordon, C.B., R.E., which originally appeared in the *New York Herald*.

"THE Chinese in their affairs with foreign nations are fully aware of their peculiar position, and count with reason that a war with either France or another Power will bring them perforce allies outside of England. The only Power that could go to war with them with impunity is Russia, who can attack them by land. I used the following argument to them when I was there: The present dynasty of China is a usurping one—the Mantchou. We may say that it exists by sufferance at Peking, and nowhere else in the Empire. If you look at the map of China, Peking is at the extremity of the Empire, and not a week's march from the Russian frontier. A war with Russia would imply the capture of Peking and the fall of the Mantchou dynasty, which would never dare to leave it, for if they did the Chinamen in the south would smite them. I said, "If you go to war, then move the Queen Bee—i.e., the Emperor—into the centre of China and then fight; if not you must make peace." The two Powers who can coerce China are Russia and England. Russia could march without much difficulty on Peking. This much would not hurt trade, so England would not interfere. England could march to Taku and Peking and no one would object, for she would occupy the Treaty Ports. But if France tried to do so England would object. Thus it is that China will only listen to Russia and England, and eventually she must fear Russia the most of all Powers, for she can never get over the danger of the land journey, but she might, by a great increase of her fleet, get over the fear of England. I say China, but I mean the Mantchou dynasty, for the Mantchous are despised by the Chinese. Any war with China would be for France expensive and dangerous, not from the Chinese forces, which would be soon mastered, but from the certainty of complications with England. As for the European population in China, write them down as identical with those in Egypt in all affairs. Their sole idea is, without any distinction of nationality, an increased power over China for their own trade and for opening up the country as they call it, and any war would be popular with them; so they will egg on any Power to make it. My idea is that no colonial or foreign community in a foreign land can properly and for the general benefit of the world consider the questions of that foreign State. The leading idea is how they will benefit themselves. The Isle of Bourbon or Réunion is the cause of the Madagascar war. It is egged on by the planters there, and to my idea they (the planters) want slaves for Madagascar. I have a very mean opinion of the views of any colonial or foreign community, though I own that they are powerful for evil. Who would dare to oppose the European colony in Egypt or China, and remain in those countries?"

FROM Lan-Chjoi-Fu, Mons. Kreitner, Member of Count Secheni's Expedition (*Monatsschrift für den Orient*, 1883 No. 4), writes:

"Lan-Chjoi-Fu, the chief town of the Province of Kan Su, lies on the right bank of the river Huan-He. It is one of the few towns into which, thanks to the former Governor-General of this Province, Tszo-Tsun Tan, European

Count Secheni's
Chinese travels.

civilization has penetrated. The number of its inhabitants may be reckoned at from 3 to 400,000 (Sosnovski says 100,000 and Mandlew from 40 to 50,000.") The manufactures and trade of this town are then described, and he gives of each separate article very detailed and interesting information.—*I. R. G. S. No. 1 of 1883.*

Tonking.

No. 359 of *L'Exploration* contains a description taken from *Le Temps* of the Tonking fortresses, viz., Son-Tay, Bacninh and Hong-Hoa.—
Indo-Chinese Peninsula.

Japan.

UNDER the head of Minor Intelligence in the Proceedings of the I. R. G. S. for 1882 is the following:—

According to information received by the Japanese Minister for Home affairs, the census of the population in all the provinces of Japan gave on the 1st January 1880 the following results:—

H. M. the Mikado and family 37			{ 20 M. 17 F.		Souls.	
Tokio	...	...	957,121	...	...	475,413
Osaka	...	...	582,668	...	...	682,929
Kioto	...	...	822,098	...	...	618,832
Kanagawa	...	...	757,462	...	...	1,833,778
Khiogo	...	...	1,391,928	...	...	1,037,260
Nagasaki	...	...	1,190,335	...	...	1,000,570
Nigata	...	...	1,546,338	...	...	1,213,152
Saitama	...	...	933,955	...	...	877,614
Chiba	...	...	1,103,292	...	...	597,728
Ibaraki	...	...	894,376	...	...	1,438,895
Gumma	...	...	581,556	...	...	1,179,247
Tochigi	...	...	581,358	...	...	1,097,215
Sakai	...	...	842,112	...	...	731,964
Miie	...	...	983,201(?)	...	...	866,695
Achi	...	...	1,303,812	...	...	1,270,463
Shidzuoka	...	...	970,022	...	...	310,545
Yamanasi	...	...	395,447	...	...	163,355
Shiga	...	...	738,211	...	...	156(?)
Gifu	...	...	839,813	...	...
Nagano	...	...	1,000,411	...	...
Miyagi	...	...	619,120	...	...
Fukushima	...	...	808,937	...	...
Ivate	...	...	591,881	...	...
				Total	...	35,925,313
				or Males	...	12,210,500
				Females	...	17,714,813
						35,925,313*

Miscellaneous Notes.

IN the recent English papers mention is made of an invention which has been patented for applying the electric light to railway carriages. By this new contrivance electricity is generated by a primary battery, which can be carried underneath a railway carriage or in any convenient part of a train. Among the merits claimed for the invention are the exceedingly low internal resistance of the battery, the facility with which it can be charged, and its freedom from noxious fumes. A trial of the system was made on the Great Northern line, when the Pullman dining-car of the 5.40 express to Leeds was

* According to the Census of 1878, the population of Japan consisted of 31,338,401 souls. See Proceedings I. R. G. Society, No. 2 of 1880, p. 497.

lighted by six Swan incandescent lamps, supplied with electricity from one battery of twelve cells; the dimensions of the battery being—length 4ft. breadth 8in., and depth 8in. The lamps diffused a bright, warm and perfectly steady light, which was at no moment affected by the oscillation of the carriage, and which made it not only possible but perfectly easy to read a newspaper or book printed in small type. The result of other preliminary trials of the system has been that several railway companies, including the Great Eastern, the South-Eastern, and the London and South-Western, have shown a desire to adopt it. The light can be turned on or off at pleasure.

In the "Occasional Notes" of the November number of the *R. E. Journal* is an account of recent firing against masonry with the 80-ton gun at Shoeburyness.

The object of the trials was to determine the best means of strengthening the existing masonry and of protecting the magazines of forts and batteries for coast defence, against the attacks of projectiles far heavier, and striking with far higher velocity, than were considered possible when the works were designed.

For this purpose the basement structure of the Spithead Forts was taken as a type of the works to be strengthened, and three targets were constructed side by side, each representing a frontage of 20ft. by 11ft., consisting of an outer layer of granite masonry, averaging 4ft. 3in. thick, supported by 9ft. 9in. of Bramley Fall masonry, 2ft. of cement concrete, and 6ft. of brick in cement, making up a total thickness of 22ft.

No. 1 portion of this target was strengthened by the addition in front of 13ft. 9in. of Portland cement concrete, 1 to 6, faced by 3ft. 9in. of granite.

No. 2 portion was protected by a compound armour plate 12in. thick, separated from the granite face by about 5in. of wood.

No. 3 portion was faced by two wrought iron armour plates, 8in. thick, separated from the granite and from each other by 5in. of wood.

To enable a comparison to be made with a homogeneous mass, No. 4 target was built up of similar frontage to the others, and 40ft. thick of Portland cement concrete, 1 to 6.

The results of one round on each target from the 16in. 80-ton gun at 200 yards, with service battering charge of 450lbs. of prism powder, and Palliser projectile weighted with sand to 1,700lbs., were as follows:—

No. 1 target.—The shot passed through the protecting masonry, scattering the granite blocks, and destroying the concrete over the greater part of the frontage, and then turned to the right, almost at right angles, against the granite wall of the fort itself, along the face of which it travelled in the concrete for about 8ft., giving a total penetration of 26ft.

No. 2 target.—The body of the shot remained in the compound plate, the base being reduced to powder, and the point projecting about 10in. within the original face of the granite. The stone struck was disintegrated, but none of those surrounding it were seriously displaced.

No. 3 target.—The shot passed through the iron plates, and about 8ft. into the body of the wall, turning to the left and destroying three granite stones in its passage; several of the surrounding stones were cracked, but none were displaced more than an inch or two.

Slight cracks were opened in the brickwork at the rear of all three targets, but no material damage was apparent in any case.

In No. 4 target, the shot preserved a tolerably straight course for 20ft. then inclining somewhat down and to the right, with a total penetration of 34 ft. The mass of concrete was split in several directions.

The relative cost of strengthening structures in targets Nos. 1, 2, 3, may roughly be taken as 1 : 4 : 3, respectively.

New Breechloading Gun. This weapon, which is intended gradually to supersede the 38-ton muzzle loader, is of 12-inch diameter in the bore and 27½ feet long, measuring over the breech-piece. The projectile is of 700lbs. weight, the same as that of the 38-ton gun, but the new gun is vastly superior to the old one in accuracy, range, and penetration, and at the same time well adapted for service on board ship. One peculiar novelty in the construction is the absence of trunnions, and the gun will be supported in its carriage by close-fitting bands, instead of by the usual trunnion-arms, an arrangement by which space is saved inside the turret.

Lyman-Haskell Cannon. THE Lyman-Haskell gun, is thus described in an article in *Iron*, inserted in the *R. E. Journal*: "The large 25-ton gun, 25 feet long, which has been in process of manufacture during the last twelve months by the Reading Iron Company, Pennsylvania, has at last been completed, and is said to be a splendid piece of workmanship. This remarkable weapon has the following peculiarities of construction. Hanging from the under after part of the gun are four large protuberances arranged in a line, each something like a cow's bag. These protuberances contain pockets for holding powder, and they communicate with the bore of the gun. The latter is charged at the breech with eighteen pounds of powder, in front of which the projectile rests in the ordinary manner; each of the pockets is intended to contain 28 pounds of powder. The firing of the breech charge starts the projectile, the speed of which, on passing the several powder pockets, is successively accelerated by the firing of the powder charge contained in the latter, which are ignited by the flame within the cannon. In this way, five successive charges are made to act against the projectile, which leaves the gun with a tremendous velocity. It is expected that this cannon will once more revolutionise the art of gunnery; and it is believed that it will carry its ball twelve or fifteen miles, and at that distance penetrate armour plates two feet in thickness. The gun has been forwarded to Sandy Hook, New York, where it is soon to be tested before a joint committee of Army and Navy officers, under a special appropriation by Congress."

A New Rifle. THE following is a description of a new pattern Enfield rifle: The length of the barrel is 33½ inches. Bore .400 or 4-10ths of an inch. Pitch of rifling 1 in 15 inches or 2 turns and a 7th in full length of barrel. Number of grooves 9. The barrel is chambered to take the cone-cased ammunition. The barrel is the same outside as the Martini Henry rifle. The horns of the extractor are closer, in order to grip the reduced cartridge. The arm has four sights, two on the barrel to obtain 1,000 yards, and two on the side to get the other 1,000 yards. One side sight is close to the body of back sight, the other is a tangentsight fixed to the upper band with a set screw. The fore-end is open underneath to avoid rust. The barrel can be cleaned and oiled underneath.

There is a return in the new rifle to the old solid band as used on the hand-made Enfield rifle of 1853. This is considered a great mistake, as in this country in the damp of Bengal, &c., the stock so swells that these bands will become immovable except the stock is first filed, and in the dry heat of the Punjab they will always be loose, and there is no screw to tighten them up.—*Simla Argus*.

Vessel of a novel kind. RECENT English papers give an account of a vessel lately sent to Natal, which can tow the heaviest vessels over the bar of Port Natal; it can act as a gigantic life-boat, and put off in the roughest sea to ships in distress; it can be used as a fire-engine of the most powerful character, if necessary; and finally, it is fitted with

guns and torpedoes, in the case a hostile fleet should menace the harbour of Natal.

In the *Overland Mail* of 2nd November 1883, appears the following notice of War Games on models. A General Order has recently been issued, the object of which is to establish, as a parade, the practice of war games on models instead of maps, and a memorandum has been printed and published to explain the advantages which, it is reasonably hoped, will accrue from the improvement, together with the method of conducting these valuable tactical studies. It should be understood that the Kriegspiel has been generally played on maps by officers of a rank above that of captain. The war game adapted to a model will enable the entire body of officers to share the instruction afforded, and it is fairly contended that "tactics can be studied" on the model, because the contest can be carried on beyond the point of actual collision when firing commences, whereas on the map the manœuvres cease at the moment of contact. The extended area of miniature operations is calculated to test the intelligence and decision of officers, who, by various devices are placed, as nearly as possible, under conditions of warfare. The chief gains, however, are that, superintended by experienced umpires, the movements are made to convey instructive lessons, and that the game can be played all the year round. "Kriegspiel" (we are quoting from the memorandum) "is generally played in the winter only, and rarely finishes at all." Blocks represent troops of all arms, care is taken to regulate the moves by time, orders are in writing, reports are made as they would or should be in war, and the symbolic soldiers are each set commanded by an officer of the arm represented. Altogether the plan appears to constitute a distinct improvement, and we may hope that it will be realised with success.

NOTICES OF BOOKS.

MILITARY TRANSPORT BY INDIAN RAILWAYS.*

By DAVID ROSS, C.I.E., F.R.G.S.

It is not often that a civilian makes a contribution to military literature which repays the attention of military readers, but in Mr. Ross' *Military Transport* we have a handbook which is really a very valuable addition to, at all events, the military literature of this country, and one which will fully repay perusal by any Staff Officer, whose duties lie in connection with the movement of troops by rail. This little work is the outcome of practical experience, for probably no Englishman has had greater experience in the movement of troops by rail than its writer. Mr. Ross superintended all the arrangements for the despatch of troops and stores by the Sind, Punjab and Delhi Railway during the Afghan War, and what that meant may perhaps be realized when we quote the gross traffic booked under warrants during the war. No less than

538,364 Troops and followers
114,156 Horses, Ponies and Mules
15,477 Bullocks
8,645 Camels
479 Guns, etc.
148,889 Tons of Stores.

were conveyed in 2,023 trains, while for some time there were about 60 trains daily entering and leaving the Lahore station. Figures like these may give some idea of the enormous pressure entailed by war on the railway authorities, and that the railway operations were conducted with success is largely due to Mr. Ross and his brother officials.

The first 50 pages of Mr. Ross' book are devoted to an explanation of the system on which troop movements are, or should be, worked, and elaborate time tables are given demonstrating what can be done. The remainder of the book gives the results of experience gained by the Afghan War, or by recent experiments as well as various improvements or suggested improvements in rolling stock. As regards troop movements in the case of any great emergency involving the rapid concentration of a large force at any particular point, Mr. Ross insists very strongly on the issue of all orders by one central authority in the Quarter Master General's Department, and though at first sight this may appear to involve all the inherent evils of over-centralization, any one well acquainted with the various considerations bearing on the subject will admit that Mr. Ross is right. For example, if it suddenly became necessary to concentrate 20,000 men at Sibi, and the despatch of the corps detailed for service was left entirely to the Staff of Divisions

* "Military Transport by Indian Railways,"—Thacker and Co., Bombay; Newman and Co., Calcutta; Brown and Co., Calcutta; Higginbotham and Co., Madras; and Chapman and Hall, London.

and Districts there can be little doubt that vexatious delays and serious blocks would occur in the very first days of the movement. Every one would simultaneously requisition trains at every great military station from Agra to Multan, suitable rolling stock for the different arms might only be available at the wrong places, certain rest-camps would be crammed to overflowing and others left half empty; certain regiments would be compelled to make inconveniently long runs and others unnecessarily short ones. Instead of one steady, continuous flow of troops and stores to the frontier, there would be a series of disorganized and spasmodic rushes which would end in much the same chaotic confusion that made such a disastrous prelude to the French March à *Berlin* in 1870.

There can be no doubt that the only way to ensure the continuity of any big movement, and the arrival in the required order of the various arms, of transport, and of stores, is to regulate the despatch of the whole by one central authority at Army Head-Quarters, or better still, perhaps, at the railway head-quarters, wherever they may happen to be. Such a task is, however, far beyond the capacity of any one controlling mind unless complete arrangements are made in peace, showing exactly the order in which corps and stores are wanted, the hours of arrival and departure, the halting places, and, in fact, all those details which can only be settled after careful consideration and with the most minute and patient calculation. That is to say detailed plans for the concentration of troops with time tables and orders, prepared and printed, must be drawn up in peace, and as there are only one or two points where a concentration in great force is at all probable, this should present no great difficulty. For example, the railway authorities may be able to show that they cannot run more than say 13 trains each way between Lahore and Sukkur, a time table might then be prepared for that section giving 13 trains each way with a distinctive letter or number for each, it might then be settled to what corps or department each train should be allotted, where halts would be made by each corps, and what would be the requirements for each rest-camp. With all these details previously arranged no serious hitch could occur, and the Commander-in-Chief could calculate with certainty on what date the concentration would be completed.

There is, however, one very great difficulty in preparing schemes for concentration, which is the difficulty, or rather impossibility, as things now are, of fixing train units. Mr. Ross in his book (as also do the Transport Regulations) gives train units for the several arms, and bases all his calculations on those units, but it must be remembered that his figures are based to a certain extent on Sir Frederick Roberts' Memorandum, written prior to the Afghan War, since which the scale of baggage and followers has been considerably modified. Moreover, with us the strength of corps taking the field is variable, so that the rolling stock required for each individual corps can only be settled on the spot, a fact which militates powerfully against the appointment of a central military authority to control the railway operations. There is, however, an obvious way of overcoming this difficulty, and that is to fix the service strength of each arm. We can then fix the train units to a nicety, and the one great objection to Mr. Ross' "one central authority" will disappear.

This proposal to fix the service strength of units has really many advantages. For example, a Native Infantry regiment consists of—

9	British officers	} in 8 Companies.
16	Native "	
16	Drummers "	
800	Rank and file	

Now, if instead of allowing such a corps to take the field as strong as possible, the service strength were fixed at say—

8	British Officers	} in 6 Companies.
13	Native " (1 being the Adjt.)	
12	Drummers	
600	Rank and file	

we should secure the following advantages :—

(1). The weeding out of all weakly men, bad shots, etc., would be ensured.

(2). A very respectable depôt would be left behind, which might be relied on to fill up gaps, and would at the same time be able to perform a certain amount of garrison duty.

(3). The exact amount of baggage to be carried, rations to be provided and transport required for each unit could be calculated in peace, and arrangements made accordingly with the service units fixed; train units could also be definitely fixed, and the despatch of an army by rail to the frontier greatly simplified. The orders for the movement would become clear and concise. For example, the Brigadier at Multan would receive a telegram to this effect: "Form rest-camp and arrange to feed 3,000 men daily if necessary. Despatch Native Cavalry with Regimental transport by trains A to F on 1st, to halt Sukkur for 12 hours approximate, and proceed onwards by trains F. to K. British Infantry to embark in trains G H, etc., etc." Similar orders would be sent to every station concerned, the 'one central authority' having previously arranged with the Railway Department what trains should be allotted to each station.

Another very important matter, and one which Mr. Ross shows most clearly, is the carrying capacity of each section of the line from Delhi to Kurachi or Sibi. It appears that if *all civil traffic* were stopped, 17 trains per diem could be run each way on the Lahore-Delhi section, but it also appears that from want of crossing stations not more than 9 trains per diem could be run each way between Ruk junction and Sibi. If then the movement is to be continuous, it is useless running more than 9 trains per diem on any section of the line. Now, from Delhi to Multan 9 troop trains per diem can be run without interfering at all with the ordinary Passenger and Goods traffic. Therefore, as things are, we cannot avail ourselves of the full carrying capacity of Indian Railways. The obvious conclusion is that the number of crossing stations must be increased wherever they are deficient, that is, of course, if military considerations are deemed paramount.

Regarding the second part of Mr. Ross' book, it would be unfair to him to here epitomize the results of his long and unequalled experience, or to give the many admirable suggestions which he has to make. Those who are interested in the matter had better buy the book, and cull from it what flowers of knowledge they can.

There are few subjects of greater importance to a country than the movement of masses by rail, and success or ruin in war may depend on this one point alone. Mr. Ross has contributed his share towards success in the inevitable struggle of the future—a struggle in which, perhaps, the advantage of railway communication with our base may prove the trump card which wins the game.*

Das 2 Leib-Husaren-Regiment. Nr. 2. im Kriege gegen Frankreich 1870-71. Von Mackensen, Lieutenant Visier im 2., jetzt im 1. Leib-Husaren-Regiment, Adjutant der 1. Cavallerie-Brigade.—Berlin, 1877.

Lieutenant Mackensen's valuable history of his regiment's operations in the Campaign in France is, next to the great General Staff work, one of the most instructive, while always remaining one of the most pleasant, works to read that we have met with on the war in question. The regiment, which, unlike most other Prussian Regiments, can trace a direct descent from one of Frederick the Great's famous Hussar corps, is that of which our own Princess Royal is Honorary Colonel, and whose black and silver uniform, with the busby, bearing skull and crossbones, she wears on parade. During the War of 1870-71, it formed part of the 4th Prussian Cavalry Division, under Prince Albert of Prussia, and took part in the Battle of Wörth, the pursuit and capture of Macmahon's army, the investment of Paris, and the subsequent operations on the Loire, all of which are detailed from a regimental point of view in a fresh and lively style, which leads the reader on through details of patrols, reconnaissances, &c., that would otherwise weary him. The operations of Prince Albert's troopers in covering the advance of the Crown Prince's army on Paris and in seeking for, and finding Macmahon's army, have justly been considered a model of what is called the "screening service" of the cavalry division, and it is from the details of this that the book gains its value. Perhaps a quotation of the general summary, given by Lieutenant Mackensen at page 42, may not be out of place here. He says:—

"On the main line of advance a strong officer's patrol was pushed about a day's march to the front, whilst half as far to the front, and a day's march and on each flank were strong flanking parties (half-squadrons). The Hussars furnished those parties,† and at first they alone formed the advanced guard, but afterwards when Krosigk's brigade was united, they and the 5th Dragoons furnished say about two squadrons as advanced party, behind which the rest of the brigade followed in column of route as main body of the advanced guard. No battery was attached to it. After Krosigk's brigade marched, with an interval of about 2,500 paces, the main body of the division, under the command of General von Treskow, the Uhlan brigade at the head, next the batteries, then the heavy brigade. In rear of the latter marched the sanitary detachment with their men mounted on waggons, and lastly the train with an escort from the heavy brigade. As long as the two companies of infantry of the 11th Corps, carried in waggons, remained attached to the division, i.e., from the 11th to the 17th August, they marched in rear of the artillery. The Uhlan brigade usually detached a squadron to each flank, half a day's march distant, marching on a level with the advanced guard, and providing flanking parties. The scouts of these squadrons and the numerous requisitioning patrols, which were constantly sent out on the flanks of the division, completed the semi-circular veil, whose most advanced point was furnished by the

* The initials of the writer of this Notice have been omitted at his own request.—*Editor.*

† The Division was composed of the 2nd Hussars, 5th Dragoons, 5th Cuirassiers and 1st, 6th and 10th Uhlans=24 squadrons in three brigades, with two H. A. Batteries.—J. M. G.

scoots of Krosigk's brigade, and whose radius was about a day's march. Besides screening the advance and finding out the enemy's movements, the scouts and patrols gave absolute security to the main body.

"At halts, the troops were placed usually in "narrow" (*enge*) cantonments, but a part of the division, at least the advanced guard, was always kept together in a bivouac. The infantry was always quartered along with the staff of the division, and when they were withdrawn the men of the sanitary detachment were armed with *Chassepots* to guard their sick and the staff. The rallying point of the division was always so chosen that in the case of a sudden attack the various arms could mutually support one another, and was generally in the vicinity of the staff-quarters. The security of the division at night was generally based on the far advanced reconnoitring patrols, and on the special patrols sent forward to certain points, thus more importance was attached to reconnoitring than to observation, to patrols than to vedettes. Instead of picquets, stationary patrols or non-commissioned officer's posts were thrown out, which soon got to be called, even officially, "*Cossack posts*." Thrown forward on all important roads, they patrolled forwards for reconnoitring purposes, and to the flank to communicate with one another. Important roads and places were in addition visited by patrols sent out by the main body of the outposts. For this purpose the advanced guard squadrons were always detailed, and officers were also sent out for special services. The troops were supplied by requisitions made in the villages on or near the line of march by whole sections (*Züge*) sent under officers for this purpose, which also acted in a measure as "flank patrols."

The book is full of the doings of these patrols, of the raids of individual squadrons, of the plucky reconnaissances of small parties, and of the reconnaissances on a larger scale made by the whole division. Reading the book one cannot fail to perceive the secret of the German success, their constant, bold, and unwearied reconnaissances, joined to the two grand principles of German strategy, "Forwards, always forwards!" and "March towards the thunder of the guns!" The services rendered by the regiment were rewarded by two Iron Crosses of the 1st class, 90 of the 2nd, and nine other orders (one of them Prussian), purchased with a loss of one officer and 19 men killed or died of wounds, and one officer and 29 men died of disease. Most interesting details of the mobilization of the regiment, and its journey to the front, begin the work. We recommend this book to every cavalry and staff officer as an excellent account of cavalry work, so aptly expressed by the German war-song with which Lieutenant Mackensen heads one of his chapters:—

"Husaren! Husaren!
Zum Städtchen hinaus,
Den Säbel geschwungen zum blutigen Strauss!
Vorans! Voran!
Wir reiten Bahn
Und Aratzen jeder Gefahr!
Sakrament Husar!"

J. M. G.

Voyenni Sbornik or Russian Military Magazine.—At the close of the year 1882, the completion of the 25th year of the existence of the *Voyenni Sbornik*, or Semi-Official Military Magazine of Russia, was celebrated. During the 25 years of its existence, there have appeared 176 Nos., containing 3,111 articles. Of these 562 have been devoted to the Art of War, 725 to Military History, 894 to Military Administration and Economy, 323 to Military Statistics and Geography, 126 to Artillery, Fortification, Topography and Cartography, 84 to Memoirs and *Belles-Lettres*, 397 to the Military Reviews of Foreign States.

Under the above headings there have appeared.—

I. Art of War :—		No. of Articles.
(a.)	Strategy	23
(b.)	Tactics, Organization and Training of Troops	245
(c.)	Infantry Tactics, Training and Equipment	109
(d.)	Cavalry and Cossacks	140
(e.)	Artillery and Engineer Corps	45
		<hr/> 562
II. Military History :—		
(a.)	History of Military Science	24
(b.)	“ of the Wars of the 18th Century	3
(c.)	Wars with Napoleon I (1806—1815)	23
(d.)	Wars with Turkey (1806—1856)	21
(e.)	Wars with the Polish Rebels	39
(f.)	Hungarian War of 1849	12
(g.)	Crimean War (1854-56)	43
(h.)	Wars in the Caucasus	74
(i.)	War Operations in Central Asia	57
(k.)	Foreign Wars between 1859 and 1866	34
(l.)	War with Turkey (1877-78)	71
(m.)	Ditto ditto from Official Sources	67
(n.)	Akhal-Tekke Expedition	5
(o.)	Bibliographical Review of Military History, and other Compi- lations	108
(p.)	Biographies	102
(q.)	History of Regts., &c.	42
		<hr/> 725
III. Military Administration and Economy :—		
(a.)	Military Discipline	25
(b.)	Complement of Officers and Men—Organization of troops and Departments—Inspection of the Forces	177
(c.)	Intellectual and Moral Condition of the Forces, Officers, Clubs and Libraries, and Education generally	189
(d.)	Military Economy, Correspondence and Reports	44
(e.)	Localisation and Distribution of the troops ; Transport, Caval- ry Remounts	85
(f.)	Victualling of the Forces during Peace and War... ..	79
(g.)	Pay and Clothing of the Troops	52
(h.)	Medical and Sanitary Departments	54
(i.)	Military Law	86
(k.)	Monetary aid to Officers and Men	62
(l.)	State Service	5
(m.)	Articles not coming under any of the above headings	40
(n.)	Bibliographical Review of Military Administrative Publications	46
		<hr/> 894
IV. Military Statistics and Geography :—		
(a.)	Geographical and Statistical Articles, relating to Russia and Russia's Possessions	92
(b.)	The Armed Forces of Russia	60
(c.)	Geographical and Statistical Articles on Foreign States	90
(d.)	The Armed Forces of Foreign States	40
(e.)	Bibliographical Review of publications connected with Mili- tary Statistics and Geography	41
		<hr/> 323

V.—Artillery	...	...	...	...	54
VI.—Fortification	...	...	...	...	59
VII.—Topography and Cartography	...	...	...	...	13
VIII.—Memoirs and <i>Belles-Lettres</i>	...	...	...	...	84
IX.—Military Reviews of Foreign States	...	...	...	...	397
					<hr/> 607
			Total	...	3,111

With the first four Nos. of the year 1883, a very complete Index to the Contents of this Publication, extending over a period embraced by the years 1858 and 1882, was issued.

Short Review of a Russian Military Pamphlet, entitled Guide (or Manual) to Tactical Instruction for a Company or Battalion issued in 1882, as Supplement to the "Voenni Sbornik" or Russian Military Magazine.

It is difficult to comprise, in the small space allotted to this Review, all the useful hints contained in the pamphlet which, as regards the "Extended Order" of a Company and Battalion, is especially instructive. Taught by the experience of Russia's recent campaigns, in which the breechloader has been used on both sides, the writer has every right to be taken as an authority on the altered conditions of warfare, which now require an extended order for infantry, and the practical teaching under this head would form an excellent guide for this most necessary branch of infantry instruction.

INTRODUCTION.—The introduction commences with a comparison between the characteristics of the "hand-to-hand" arm (*l'arme blanche*), the bayonet, and sabre and the "far-hitting" arm—the rifle. The former has speedy and decisive action, the latter in the generality of cases has not a decisive effect, and therefore must be considered as preparing from afar the final and decisive blow which is to be dealt with the bayonet. Further, for effective action of the rifle, skill, rest and absence from movement are essential; and for that of the bayonet pre-eminent intrepidity, movement (*dlan*), and speed.

Starting thus from first principles, the writer digresses for a half page to consider the "necessity for the three kinds of arms—" infantry, cavalry and artillery—since the conditions of warfare cannot be combined in one arm.

He sums up thus: "And in this manner we see that each of the three arms is weak in that point in which one or other of the remaining two is strong." And, consequently, when we combine in one detachment proportions of the three arms, we obtain a weapon which, theoretically, should give us, when efficiently handled, all that the conditions of warfare require to render success the most decisive.

These are given as in all English text books. The Russian rate of marching is about 110 paces per minute, in quick time and 180 in double time—4 *vershs* (= 2½ English miles) per hour, 20—25 *vershs* (18—16

Tactical characteristics of infantry.

English miles) per day, 65—80 miles per week with two halts. He further adds: "Infantry can alone furnish workmen for making field works,

preserving at the same time its fighting formation and efficiency. The care of the horses of cavalry, and guns and horses of artillery prevent men being detached from these two branches for this purpose."

That number is taken as a unit which, while being fairly independent, can be readily commanded by one man, *i.e.*, a battalion from 800—1,000 men. This unit, its organisation, in strategic movements, *i.e.*, marching from point to point in the theatre of war, or when employed in reserve out of fire of the enemy, or as an advanced guard, forms a handy and united whole which can be commanded by one man, but in an engagement before the enemy, owing to the necessity of opening out to lessen losses, and to simplify manœuvring on the wide front of the present day, the company becomes the tactical unit. Thus the battalion is the administrative and strategic unit, the company the tactical unit. The division into companies is further necessary to simplify interior economy, and for convenience of instruction.

The company in Russia is subdivided into four *pelotons* or sections, and on a war footing these are further divided into four sub-divisions.

In an infantry battalion, on war-footing, a company consists of 108 files; on peace footing of 48. In rifle battalions of 84. An infantry regiment consists of four battalions of four companies, the latter being numbered from 1—16. An infantry division consists of four regiments forming two brigades.

The success of action of fire-arm depends on rest, and the taking up by each man of the most comfortable position for shooting, with support for rifle. To fulfil this condition the "open-order" is adopted. On the other hand, for the success of the bayonet, close order, shoulder to shoulder, giving confidence in immediate support, and consciousness of difficulty to enemy to break through the stolid line, and the ability of the whole mass to deal a concentrated blow like one man, is necessary.*

Hence two formations are indispensable, and each must be adopted according to circumstances and the object in view. The open order, at a short distance from the enemy, resolves itself into the "line" formation; "column," formation is also used for charges with the bayonet to increase confidence but this can only be done when not exposed to heavy fire. In intersected ground the battalion necessarily breaks into "company" formation to facilitate movement and to lessen the target to the enemy.

Russian "orders of battle." (1). Line or deployed formation; (2) close and open column of companies and battalions; (3) company formation; and (4) open order.

(1). Convenience of command; (2) convenience of use of fire-arm and "hand-to-hand" weapon; (3) smallest possible loss from enemy's firing; (4) mobility; (5) speed; (6) free adaptation of each arm to locality; (7) simplicity of formation, and readiness for changing to any other order, that the ever varying conditions of the fight may demand.

* Our recent escape from disaster in the Soudan proves the truth of this passage.—*Editor.*

Means for conveying
commander's orders to
subordinates.

(1). By word of command ; (2) by signal ;
(3) by order.

(1). Used when all concerned can hear it ; (2) conventional combination of sounds on bugle, drum or whistle ; (3) may be written or spoken, and is more explicit than other forms, as not only the formation, but also the object of movement can be explained. This latter is the best if *time* permits ; (2) seldom used and unsatisfactory, because (*a*) apt to be misunderstood, and (*b*) acted on by neighbouring troops other than by those intended ; (*c*) publishes impending movements to observant enemy ; (*d*) accidental similarity of enemy's signals with our own may give rise to misunderstandings.

Company formed in two ranks ; 4 *pelotons* numbered from right to left. Files told off into "odd and even." Chain of command is "company commander." Two next seniors command 1st and 3rd *pelotons*, and the right and left half companies respectively. Two next command 2nd and 4th *pelotons*. The honor of carrying the battalion standard is assigned to the most deserving of the "under-officers," aided by an assistant.

The plan gives the usual line or deployed formation of a company and battalion with positions of officers, &c. The difficulty of commanding a battalion in line requires that individual action be given to company commanders, and battalion movements are executed by individual movements of companies instead of the battalion as a whole.

Chiefly by volleys, which is the best way of controlling the fire and turning it to the best account under the eye of a practised and cool-headed company commander. Besides this, the moral effect of volleys is great, many fall at each, and the simultaneous leaden hail of a number of bullets, judiciously directed by one man, cannot fail to have discouraging effect on the enemy.

Under 400 yards best : effect well observed : very careful adjustment of sights not required. Under 250 yards : aim should be taken below object. Above 250 yards, at knees or chest, according as enemy is altogether exposed or lying down or kneeling. Above 400, careful adjustment of sights necessary, and above 800 it is a good plan, especially at moving objects, to make a difference of 100 yards in the sighting of front and rear rank : by this means area of dangerous ground is increased, and with it the losses. Volleys at such long ranges, however, should only be undertaken at very distinct objects and in exceptional circumstances ; they are very effective at 700 or 800 yards at a retreating enemy. As regards minimum distance volleys have been known almost at point of muzzle. In repelling cavalry best given when the charging line is 70 or 80 paces off, so as to give time to come down to the charge. To meet charge of infantry best at 30 paces to give time to get pace up for counter-charge. Words of command almost same as our own : (1), fire by company, half company or section &c. ; (2) on such an l such an object ; (3) at so many paces (or fixed sight) ; (4) ready ; (5) present (or aim) ; (6) fire.

So as not to risk rifle being carelessly loaded or aimed: 5-6 volleys a minute is maximum number for effective result without adjustment of sights; and 3-4 when sights have to be altered.

Is undertaken by the reserve, aided by the remains of fighting line. At 50 yards from the position company commander shouts "hurrah"!!! and the whole close with enemy. Once committed to a charge, there must be no hesitating or indecision, as the ruinous result of a charge, repulsed before closing with the enemy, is of all things the most disastrous, as the enemy, untouched, unbroken, and confident are at liberty to pour well directed volleys on the jumbled mass of fugitives within easy range.

Are divided into those of battalion and company. Battalion columns may be of sections, double sections, or four sections (company). Company columns of sections or double sections. Close column is formed at five paces, open columns above five; latter seldom used. As a general rule columns are only useful when troops are moving at a distance from the enemy and are under cover. Disadvantageous for fire as the front of fire is confined to the front of the column, the leading unit of which must lie down for the second to fire over.

Are treated as in all military works on the subject. Battalion columns are not used for attack with bayonet. Double section columns of companies found the best, as a broader front is opposed to the enemy, and the support of the rear double section is sufficient to be relied on.

The plan shows very much the same disposition as in use in our army. The characteristics and general scope of the formation is thoroughly considered by the writer. The "company reserves," which correspond to our "supports," are, he says, necessary to strengthen the "chain" or "fighting line," supply its losses and join with it in the final charge. "Reserves" are placed behind the fighting line at irregular intervals and distances, according to nature of locality and object in view. The formation is not symmetrical. Front of "chain" two paces per man.

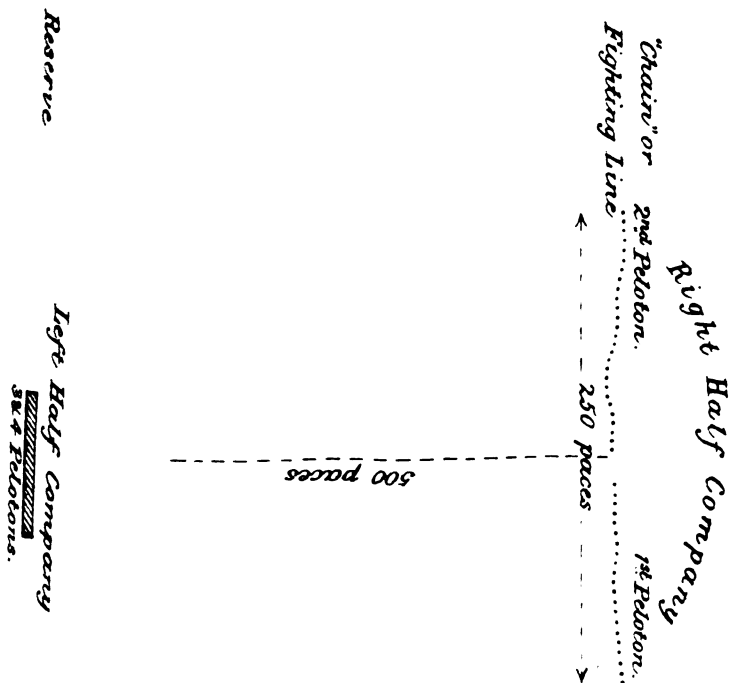
Best to extend two sections first, leaving other two in support. Commander of fighting line names one as section of direction, and the section leaders in turn name one subdivision of each of their sections. The commander of the fighting line superintends the whole extension and movements, accompanied by two files to carry orders. The commander of the fighting line superintends its action, and (most important) the expenditure of its ammunition. The fighting line is reinforced either by prolonging the front or increasing thickness of files. Fire is kept up by "volleys," and independent fire with named number of rounds, generally by sections; sometimes by whole fighting line.

Manœuvring and general characteristics of columns.

Fundamental rules for extension of "chain."

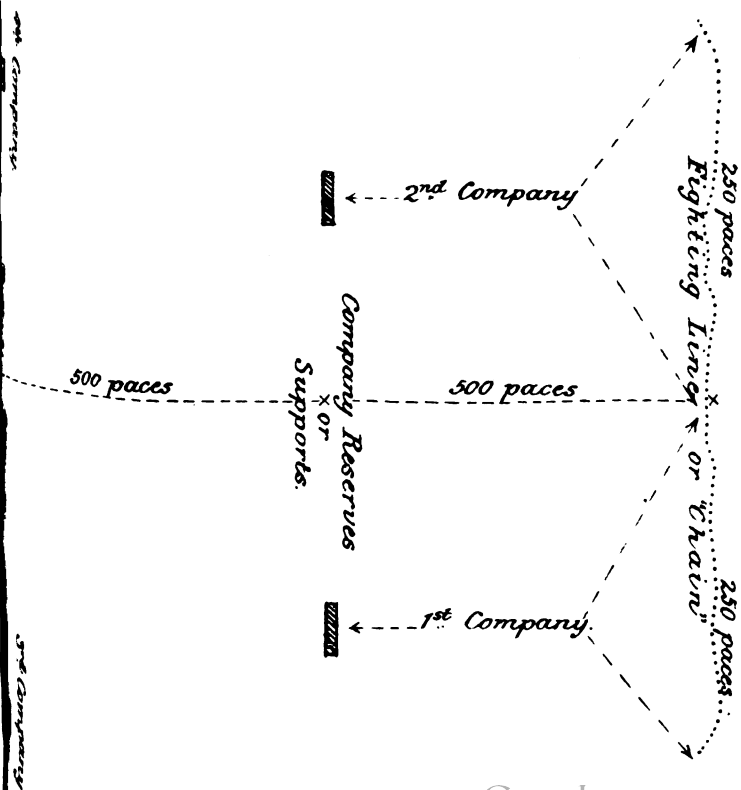
EXTENDED ORDER

COMPANY.



EXTENDED ORDER

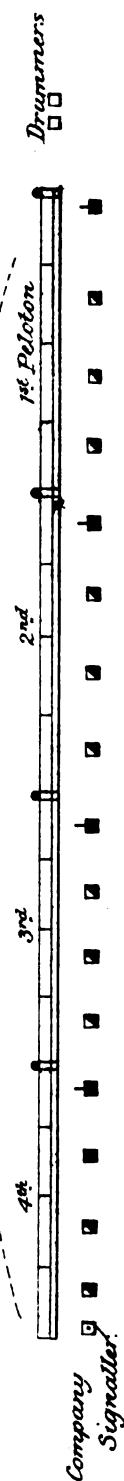
BATTALION.



COMPANY IN LINE.

Company ☐ Commander.

96 Files = 85 paces



Section "under Officers" shown thus

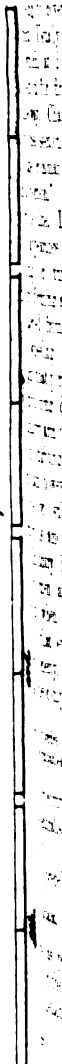
Subdivision Leaders

Officers

BATTALION IN LINE.

Battalion ☐ Commander.

350 paces.



The advance of line in extended order is divided into two periods—the “advance or approach,” and the “attack.” The advance is made in quick time when outside zone of aimed fire; and at double when within that zone, by rushes of alternate subdivisions or sections, the object being to cover the rush of one portion by the fire of another in front. Usually that section is ordered to make first rush in front of which, at distance of from 100 to 200 yards, is the most favorable position for firing to cover advance of others. Retirement made in same way. Change of direction on the move at a small angle is made by one section or subdivision being moved up the required angle, and the command being given “change of direction on such and such a portion.” Change at a large angle must be preceded by halt of whole line. Latter generally only necessary on sudden and unexpected appearance of enemy on flank.

Enveloping or turning attacks may be made by flank portion wheeling up, forming a general curved line, or by a separate portion being detached from the reserve. Counter-strokes by enemy may be met by wheeling back the portion on the threatened flank, or by moving back that portion in *échelon* in such a position as to enfilade the enemy's enveloping detachment.

The Infantry arm of the present day, in a fairly intersected locality, enables the fighting line to repel cavalry attacks without closing. On open plain, however, the line must close or assemble on the leaders of sections or subdivisions. The control of the expenditure of ammunition is among the chief responsibilities of the leaders. The Russian Infantry have 120 rounds per man with the regiment—60 carried by men and 60 in carts. The difficulty of replenishing ammunition when under the close fire of enemy obliges careful supervision that every man is fully supplied when line is at 700—800 yards from enemy.

Just as the company commander superintends the company extension and further movements as shewn above, so does the battalion commander that of the battalion, the chain of command descending from him to the company commanders and so down to the subdivision commanders, on the decentralisation system, so necessary in the open order of the present day.

Must be preceded by as large a concentration of men as possible so as to outnumber the enemy in this, the decisive phase of the fight and by as minute a reconnaissance as possible, by the commander, of the obstacles to be overcome in the final rush. It should as far as possible be a surprise.

By a detached body of troops against flank or rear of enemy are very effective, though risky as weakening the attacking force, and exposing the detachment to be cut off. An enclosed country promises the best chance of success to such an undertaking.

Of commanders must be clear, and they should satisfy themselves that the troops and subordinates are understanding them thoroughly before the commencement of

Battalion “ordre de Bataille” by companies.

Bayonet attack.

Détours.

Orders and instructions.

action. Commanders should be imperturbable examples to their men, brave, men of decision and strength of will with quick eye and observation, ready to meet the ever changing conditions of the fight, and with presence of mind to seize favorable opportunities offered by mistakes on enemy's side.

A few pages are given to defensive action, but space is not sufficient to touch on it.

The last two chapters are confined to—

- (1). The mutual relations of infantry and cavalry in war.
- (2). The tactical significance of the nature of the locality.

And in the Appendix are given extracts from "instructions for summer occupations of troops" relative to the tactical training of the company and battalion.—C. H. H. B.

"Manual of Tactical Instruction for Cavalry Bodies in Mounted formations (with sketches.) Compiled by Colonels R. Durop and V. Kukhomlinoff of the General Staff. A supplement to the "Military Magazine"; 1882, Published at St. Petersburg."

The above pamphlet, consisting of some 80 pages, states as its object "the systematic exposition of the Regulation movements, of certain tactical relations and circumstances, and of the practical application of the various cavalry orders of battle, so as to enable the cavalry officer to bear in mind a few elementary precepts essential for the tactical development of cavalry." It forms in fact a sort of commentary on the Russian cavalry drill book, examining, closely and critically, much after the German fashion, the *raison d'être* of the various movements laid down, their aim and when and how applicable; though professing to give only *tactical* instruction, it also treats of the strategical uses of cavalry and of its employment with the other branches of the service. It of course abounds with maxims of cavalry truisms, all of which may be found in the numberless English works on military topics, but there are a few points in it peculiar to the Russian cavalry which may be considered worthy of notice: the whole is illustrated by sketches, roughly executed, but sufficiently clear and explicit for the purpose for which they are intended.

As regards pace: the walk of the Russian cavalry is only 3·34 miles (5 *versets*) per hour; their other paces correspond almost exactly with those in vogue in our service.

The duties peculiar to cavalry are divided into:

- (a).—Those before a battle: including reconnaissance of the ground and of the enemy, protection from surprise, minor enterprises (such as the destruction of the enemy's communications, convoys &c., small attacks and surprises causing uneasiness in his ranks.)
- (b).—Those during a battle: including general attacks in large bodies, usually executed towards the end of a doubtful battle to give the final stroke. Partial attacks with small bodies whenever opportunity offers.
- (c).—Those after a battle: including the pursuit of a beaten enemy, or the delaying of the advance of a victorious one.

Their organization differs slightly from ours. The squadron is divided into two half squadrons (troops), each half squadron into two

Vzrôds (half troops, answering to the old division in our service) ; each of these half troops has its leader, as also has the half squadron, and the squadron ; thus the complete squadron is led by seven officers, and has, in addition, sixteen non-commissioned officers and four trumpeters.

Four squadrons go to a regiment in all branches of cavalry, except in the case of Cossacks, with whom six squadrons make a regiment.

Two regiments=1 Brigade.

Two brigades (one consisting of one regiment Cossacks, and one regiment Hussars, the other of one regiment Dragoons and one regiment Lancers) form the division which thus consists of four different kinds of cavalry. The armament of all is, however, the same, lance and pistol for front rank, sabre and carbine for rear rank.

The normal formation of Russian cavalry in manœuvring, preparatory to an attack, appears to be squadron columns of half troops ; this corresponds to our recently introduced squadron columns—for their half-troop would be of about the same strength as our full troop. The same advantages, *viz.*, handiness, flexibility and capability of showing front quickly in any given direction, are claimed also for their columns that we claim for ours: All formations of line from these columns, either to the original front, to either flank, or at any angle between these two, is formed by the complete, or partial, wheel of half-troops, never by “sixes” (which is the same as our obsolete threes.)

For the purpose of massing large bodies (such as reserves,) in positions safe from fire, these squadron columns of half-troops are merely brought to close intervals.

Columns of route consist of :—“Sixes” (*i. e.*, three front rank, three rear rank abreast.) Their “Threes,” answer to our sections (*i. e.*, three front rank followed by three rear rank). In diminishing the front on the march, the head of the column moves out at an increased pace, till the requisite lengthening out and consequent diminution of front has been effected. This differs from our plan of halting the tail of the column while the head moves on at the original pace, and has the advantage of not delaying the march of any portion, but on the other hand the diminution of front must begin to take place at a considerable distance from the spot where such diminution becomes necessary. It might be an improvement to be able to use either method.

Under the heading “circumstances justifying attacks in column,” the authors, after dwelling on the manifest disadvantages which would usually attach to such attacks, give two instances in which they succeeded, which, from their singularity, are worthy of a passing notice :—

“In the Polish Campaign of 1831, at the combat of Dembe Velki, a squadron of Polish cavalry attacked our infantry who were in extended order behind a river.

“In order to attack our infantry, the Polish cavalry had to cross by a bridge ‘in a column of route, in which formation they attacked, and with success, our infantry being taken completely by surprise.’”

“In the year 1809, in Spain, the French attacked a mountain ridge of the Somo Sierra, strongly held by the Spanish infantry and artillery ; the steepness of the slope immensely increased the difficulty of an attack on the position, besides which it was intrenched ; an attempt on the

part of the French infantry to take the ridge failed. Napoleon then ordered a regiment of Polish Uhlans to advance by a road which led up to the ridge. The regiment, formed in a column of route, ascended the hill ; hidden by smoke and dust, they succeeded in gaining the summit ; the Spanish infantry, astounded by this unexpected attack, after firing a volley, broke and fled."

The above instances are given as curious historical facts rather than as being exploits from which inferences may be drawn for future guidance.

Chapter IV treats on the subject of patrols, scouts and advanced posts of observation. In each squadron there are sixteen selected men (four in each half-troop) told off as "patrols." When called out they form up in a body in front of the centre, under command of an officer, assisted by a non-commissioned officer and trumpeter. After receiving general instructions as to the object for which their services are required, they are taken out by the officer in command, either extended or in a formed body, or partly one and partly the other, as he may think advisable.

In addition to these patrols, six men per squadron are told off as scouts, who not only examine ground ahead of the squadron, but act also as moving vedettes ; a squadron acting singly sends its scouts to either flank, and even to the rear, as well to the front. In fact the Russian scout appears to combine the duties of flanking parties with those of scouts as employed in our own service. They are supposed, under ordinary circumstances, to keep at a distance of from 200 to 300 paces from their squadron.

Chapter V concerns the employment of larger bodies of cavalry, and also of its combination with horse artillery. To each brigade of cavalry is attached one battery of horse artillery (two batteries to the division). The attachment of guns to bodies smaller than a brigade is condemned, on the ground that when the necessary deductions for scouts, patrols, escort to the guns, &c., (proportionately much greater in small bodies than in large ones) have been made, too large a portion of the force has been taken out of the fighting line.

The normal formation of the cavalry division, for purposes of assembly or concentration, is two regiments (1 Cossack, 1 Hussar) in front line and two regiments (1 Uhlan and 1 Dragoon) in second line, the whole formed in squadron columns of half-troops at close intervals, the two batteries of horse artillery being in rear of second line. The above is termed the "reserve formation," in contradistinction to the "fighting formation," which is the term applied to lines, deployed or extended, or to squadron columns at deploying intervals. It is calculated that the greatest *deployed* force which can be commanded by one man is from eight to ten squadrons : this would appear to be an extreme limit. Even more than this, it is considered, might be controlled by signal which, however, would not ensure the movements, changes of pace, &c., being sufficiently simultaneous to develop the full force of a cavalry attack.

The "fighting formation" for a single regiment is, two centre squadrons in line, two flank squadrons *écheloned* in rear, either in line,

or in squadron columns ; with a Cossack regiment four squadrons would be in front line, two *écheloned*.

For a light brigade (10 squadrons) four in line, four *écheloned* on the exposed flank in line of squadron columns, two on the other flank. The commander of a heavy brigade has only eight squadrons at his disposal.

The Russian cavalry division is divided into three lines (as with us)—first line in “fighting formation,” *i.e.*, either in line or in squadron columns ; second line (or support) either in “fighting formation” or in “reserve columns,” *i.e.*, squadron columns at close intervals ; third line (reserve) in reserve columns.

Though the manual professes to treat of tactical instruction only, great stress is laid, nevertheless, on the importance of strategical (as opposed to tactical,) instruction, in which matter indeed the Russians had, until recently at any rate, gone beyond all other continental nations, even beyond their far-seeing neighbours, the Germans. The authors of the manual are of opinion that by far and away the most important duties of modern cavalry are *strategical* duties, *i.e.*, duties lying beyond the sphere of the battlefield ; such, for instance, as that of screening the mobilization, concentration, and movements of the masses of its own army. Several marches, it may be, in rear, endeavouring at the same time to discover, and interfere with as far as possible, similar processes which may be going on in the hostile army. For instruction in this class of duties, it is considered advisable to have two cavalry forces opposed to each other at a distance apart of several marches ; each side being subject to such conditions of time and space as local circumstances may render needful. When these forces come within “tactical” distance of each other the manœuvres cease. Instruction, however, in the execution of “tactical evolutions” and in the carrying on of the actual attack should be confined to exercises with one side only, opposed to an “imaginary enemy.”

There are many other headings in the manual, such as “cavalry *v.* infantry,” “*v.* artillery” “*v.* cavalry” &c., &c., but these headings contain little that is new, save in the matter of historical examples, to a man who has read any of the many English works treating of the same subject ; they merely show that Russian experience and teaching is on much the same lines as our own as regards the employment of cavalry.

L.

Events are so shaping themselves that the value of this notice, written in 1873, becomes now the more apparent.

The Strategical Importance of the Euphrates Valley Railway. By F. M. L. Baron Kuhn Von Kuhnfeld, Austrian War Minister. Translated by Captain C. W. Wilson, R E. 2nd edition. Stanford, 1873.

In printing a second edition of Baron Kuhn Von Kuhnfeld's pamphlet, Captain Wilson has prefixed a few remarks on the progress of Russia, since the pamphlet was originally written in 1858. The unity of Germany has dispelled any dreams entertained by Russian statesmen of becoming dominant in the Baltic, while the hostility of Germany and Austria renders a direct Russian march to Constantinople impracticable.

Russia, therefore, will probably endeavour to carry out her Eastern policy with additional vigor, so as eventually to reach the Mediterranean and Persian Gulf from the Caucasus and the Caspian.

It is to this, though still distant end, that all her movements in Asia are believed to be directed. The complete conquest of the Caucasus, the advance to Tashkand, the Khivan Expedition, the railway from the Caspian to Teheran, are all moves in the game.

Baron Von Kuhnfeld points out that the great counter-move would be the construction of the Euphrates Valley Railroad. The Russian lines of advance are intersected by the line of the Euphrates, which, running in an oblique direction from the head of the Gulf north of Antioch to the Persian Gulf, passes along the diagonal of a great quadrilateral. This quadrilateral has its two western corners on the Mediterranean, its two eastern on the Caspian and the Persian Seas. Thus the diagonal of the Euphrates takes all Russian lines of advance in flank. Hence the secure possession of the Euphrates line is decisive as regards the ownership of all lands lying within the quadrilateral. It must, therefore, be the political and strategical task of Russia to get the Euphrates into her hands, and that of her opponents to prevent her doing so at any cost.

The great importance of a railway along this decisive line follows as a matter of course, as it is the only means by which it would be possible to concentrate on the Euphrates or in the northern part of Mesopotamia, at any moment, a force sufficiently strong to operate on the flank of a Russian line of advance, and to stop any forward movement thereon. The Euphrates Valley Railway becomes, therefore, a factor of inestimable importance in the problem of this great, though perhaps still distant, contest. But, even now, the construction of such a line would counter-act the policy of Russia.

Such are the views propounded in this very interesting pamphlet, and they certainly afford matter for serious reflection. *The Ocean Highways: Geographical Magazine*. Edited by Clements R. Markham. New series, April 1873, No. 1, Vol. I.

THE Imperial Russian Geographical Society, which, in respect of the aid and countenance it affords to those who have anything interesting or instructive to write about, probably far outstrips any other existing Society, has lately been publishing or republishing some works of great interest. Amongst these may be reckoned :—

Mr. G. S. Karelin's travels across, and along the coasts of, the Caspian Sea. St. Petersburg, 1883.

Geographical-Statistical Dictionary of the Russian Empire in 6 vols. (the sixth in the Press). St. Petersburg, 1883.

This work has been more than twenty years in process of compilation by various members of the I. R. G. S.

Mr. G. N. Potanin's Outlines of N. W. Mongolia. St. Petersburg, 1883.

Colonel N. M. Przhevalski's Third Journey to Central Asia. From Zaisan via Hami to Tibet and the highlands of the Yellow River. St. Petersburg, 1883.

No. 4 of the *Izvestiya* (Intelligence) of the same Society for 1883 contains the following articles which throw light on subjects of importance in the present stage of the world's history :—

From Kobdo to Chuguchak, by Mr. A. Vaseneff, pages 292 to 312.

Voloshanin's itinerary of Route to Kulja in 1771, by Mr. N. Yadrintseff,* pages 312 to 315.

* The Editor of the *Vostotchnoye Obozrenie* (*Eastern Review*).

Notes on the Kara-Kum sands, by Mr. A. Konshin, pages 315 to 333.

The Pamir Expedition of 1883, pages 332 to 340 (with map) giving an account of the journeys along the Upper Oxus of Dr. Regel, Captain Putyata, Geologist Ivanin and Topographer Benderski.

The War in Turkmenia. Skobelev's Campaign in 1880-81, by Major General N. I. Grodekoff. V. S. Balasheff, St. Petersburg, 1883.*

In No. 39 of the *Turkistan Gazette* of the $\frac{44^{\text{th}}}{16^{\text{th}}}$ October 1883 is the following :—

The *Russki Invalid* communicates this information : "There has just been issued Vol. I of a work by Major-General Trans-Caspian Province. Grodekoff entitled "The War in Turkmenia ; Campaign of Skobelev during 1880-81."

We cannot but hail with peculiar satisfaction the appearance of this work which tells us in great detail, on the basis of authentic documents, all about the brilliant deeds of our forces in Trans-Caspia and of the personality of their glorious leader. As an excellent compilation of a mass of valuable documents published for the first time and illustrated by a considerable number of beautifully prepared drawings, the labour of Major-General Grodekoff furnishes us with an incontestably valuable addition to our military-historical literature. Volume I contains a short account of the Trans-Caspian Province subsequent to its occupation in 1879, and includes an epitome of the various plans for the subjugation of the Akhal-Tekke oasis, the record also of the appointment of Skobelev to the chief command of the forces, the history of the preparations for the expedition and the arrival of Skobelev on the East Coast of the Caspian. To the work are attached a detailed and coloured map of the Trans-Caspian Province on a scale of 50 *versets* (133 $\frac{1}{3}$ rd miles) to the inch, five drawings illustrative of the types of the several localities of Trans-Caspia, and an excellent portrait of Skobelev, engraved from a photograph taken at Gok-Tapa in February 1881. The book contains 450 pages and the price is 2 $\frac{1}{2}$ *roubles*. (7s. 6d.)

In due course we will communicate a more detailed account of this work.

Since the above extract was put into type, the writer of what follows has had the pleasure of glancing over the pages of this interesting and comprehensive work by one of the greatest of Russia's soldier-politicals in her Central Asian territory.

Space does not now permit of doing more than recognise these properties. Moreover the reader will best be able to judge of the scope of the book from a translation of the contents of Vols. I and II which are appended.

It only remains to add that not the least important part of it, in the light of recent telegrams, is the opening sentence of Vol. I which runs as follows :—

"That vast country between the Caspian and Aral Seas which is called Trans-Caspia is bounded on the north by the Sam sands, on the south by the *Gurgan* river and the Kopet-Dagh mountains and on the east by *Afghan-Turkistan*."

After reading this the question naturally suggests itself, are these the southern and eastern limits of Russia's Trans-Caspian Province ?

* Vol. IV, in conclusion of this important work, is announced to appear shortly.

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Lurion, (M. F.)—La guerre Turco-Russe de 1877-1878. Campagne de Suleyman-Pacha. Paris, 1883.

Bazaine (L'Ex-Maréchal.)—Episodes de la Guerre de 1870, depuis le blocus de Metz. Madrid, 1883.

Kriegsjahr (Das) 1863.—Nach Acten und anderen Authentischen Quellen Dargestellt in der Abtheilung für Kriegsgeschichte des K. K. Kriegs-Archivs. Mit Sechs Tafeln. Wien, 1883.

The War in Egypt.—The illustrations by Richard Simpkin, the text and maps by special permission from the *Times*. London, 1883.

II.—MILITARY ADMINISTRATION.

Lobko, (Major-General.)—Organisation of armies. Instructional notes for the officers of the Nicholas Academy of the General Staff. St. Petersburg, 1883. (Russian.)

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Report of the Chief Committee, on the reconstitution and organisation of the Russian Army from October 1880 to January 1883. St. Petersburg, 1883. (Russian.)

Report of the working of the Corps of Military Topographers for 1882. St. Petersburg, 1883. (Russian.)

Instructions for Étappen Commandants and Officers in time of war.

Fedoroff, (Lieutenant.)—Guide for Transport Service for the use of the non-commissioned ranks. St. Petersburg, 1883. (Russian.)

Rau, (S.) L'État Militaire des principales puissances étrangères au printemps de 1883. Allemagne, Angleterre, Autriche, Espagne, Italie, Russie. Paris, 1883.

Farre, (le Général, Sénateur.)—Observations sur les réformes militaires à l'Étude. Paris, 1882.

Drygalski, Von, (A.)—Die Russische Armee im Krieg u Frieden, nach den neusten Re-organisations Bestimmungen und anderen Quellen dargestellt. Berlin, 1882.

* This list has been compiled from an "Index to new books received in the Library of the Russian General Staff during the six months ending 30th September 1883."

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Ochswadt (Dr. Alexander).—Gesundheits-Katechismus für den Deutschen Soldaten. Berlin, 1882.

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Russell, (S.)—Armed strength of Switzerland, compiled in the Intelligence Branch of the Quarter-Master General's Department. London, 1880.

Official Army Register for January 1882. Washington, 1882.

Richards, (W. H.)—Text book of Military Topography, including the courses of instruction at the Royal Military Academy, the Royal Military College, the Staff College, Garrison Instruction, and Examination for Promotion. London, 1883.

Manual for Regimental transport. London.

Manual for the Commissariat and Transport Corps. London.

Furse, (G. A.)—Military transport. London.

Regulations for the supply of stores to an Army in the Field. London, 1881.

III.—TACTICS AND STRATEGY.

Vitkovski, (V.)—Military Telegraphy. Manual for the use of the rank and file of the Military-Telegraph Park. St. Petersburg, 1883. (Russian)

Operations of the 1st and 2nd Sections of the Caucasian Military Telegraph-Park, (with two sheets of maps. Russian.)

Dispositions relatives à l'exécution des manœuvres d'automne en 1883. Paris, 1883.

De Beauval, (E.)—L'infanterie montée en Algérie. Paris, 1882.

Tollin, (H.)—Des moyens d'augmenter la puissance des feux de l'infanterie sur les champs de bataille. Paris, 1882.

Ohabot, (Jacques de.)—Aide-Mémoire des officiers de Cavalerie en Campagne. Paris, 1883.

Barberin, (Le Capitaine de.)—Manœuvres et tir des batteries à cheval attachées aux divisions de Cavalerie. Paris, 1882.

Conséron de Villenoisy.—Quelques réflexions sur les méthodes à suivre pour l'attaque et la défense des places fortes. Paris, 1882.

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ORIGINAL PAPERS.

GOLD MEDAL ESSAY,

1884.

By Captain E. G. BARROW, *7th (D. C. O.) Regiment, N. I.*

"THE BEST METHOD OF DEVISING A SYSTEM OF RESERVES FOR
THE NATIVE ARMY OF INDIA AS AT PRESENT ORGANIZED."

MOTTO :

"Take thou and strike ! the time to cast away
Is yet far off."—*Tennyson.*

I.

AFTER our experiences in the Crimea and Zululand, after the lessons conveyed by the Afghan and Franco-German wars, the necessity for a reserve. it is scarcely necessary to demonstrate the necessity and advantages of organizing a system of reserves to meet the requirements of an army.

The success or failure of a prolonged campaign will depend, more perhaps than upon anything else, on the means available for preserving the efficiency of the army in the field, and filling up the unavoidable losses occasioned by war. Our present system of bringing up regiments to war strength is unsatisfactory, and in case of war on a large scale utterly impracticable.

In the late Afghan campaign the only means of increasing the strength of regiments was by recruiting. The result was that regiments went into the field numerically weak ; that recruits being urgently required by all regiments the demand became greater than the supply, and those obtained were often of very inferior quality ; that their training was hastily and unsatisfactorily carried out ; that, owing to this desultory, perfunctory training, the few who joined the ranks were of very little use ; and finally that the greater number of the extra two hundred men authorized were not ready to join the ranks till after the campaign was over. When such are the results of our present haphazard system after a comparatively bloodless campaign, it will scarcely be surprising if

the Indian army breaks down under the trying strain of a great and prolonged war, involving a heavy and continuous drain of human life.

Colonel Collett, in a memorandum written at the conclusion of the first campaign, put this most forcibly. He says : " The Punjab was immediately overrun with recruiting parties from different corps, all bidding against each other ; and regiments in the field had to send away their best non-commissioned officers and men, and even, in some cases, British officers, to recruit. Hundreds of men were thus enlisted who ought never to have been admitted into the service ; the efficiency of the fighting regiments was impaired, and at the end of the campaign we had only a number of half-trained raw lads to supply the numerous vacancies which sickness, death, and desertion had caused in the ranks. It is impossible to conceive a more forcible illustration of the straits to which an army may be brought by the want of forethought and organization, and it is very fortunate that a prolonged campaign did not place an extreme strain on our so-called system."

In short there is no other but the reserve system capable of fulfilling the conditions imposed by the rapid waste of life inseparable from modern warfare. Augmentation by volunteering is not only an unsatisfactory makeshift, but it is absolutely detrimental to those corps which, by supplying the volunteers, lose in all probability their very best men. Augmentation by recruiting is worse than useless, for, even if you have time to thoroughly train recruits which is improbable, they cannot in any case be *disciplined* soldiers confident in themselves and their leaders. The lessons of the Zulu war teach in no ambiguous language the danger of employing drilled but undisciplined lads.

On the other hand the marvellous efficiency from first to last of the German army in France was due above all to that admirable system of reserves which in one shape or another has since been engrafted on every army in Europe.

The general features of the European system—conscription, short service, localization of regiments, and peace cadres—are too well known to require description ; and moreover to the Indian army the application of conscription in any shape is obviously impossible and unnecessary. Short service on an extended scale is incompatible with our position in the country and the maintenance of a reliable mercenary army ; localization is positively dangerous, while peace cadres are inapplicable to an army which must always be in readiness for war. This last is a point which cannot be too strongly insisted on, as there are many persons who seem to think that the adoption of a system of reserves will enable the Government to make a large reduction in the standing army. In Europe, without doubt, this would be the case, but for an empire so constantly engaged in little wars, as is England, and more particularly for that portion of the imperial forces which India maintains, it would be a most dangerous and short-sighted economy to reduce to any great extent the establishments maintained in peace.

The fact is, we cannot call out reserves for every little war in which we engage, nor even for moderately big ones, so that for all but a life-

The reserve system the only reliable one for maintaining an army in the field.

Unsuitability of European systems to India.

and-death struggle of large proportions the reserve is practically non-existent, and we must look to our peace establishments alone for the conduct of warlike operations. It follows that no great reduction in peace establishments can result from the adoption of a reserve system in India.

From what we have said above, it is clear that the reserve systems of European armies are inapplicable to the Indian army, and any attempt to form a reserve on the principles which guide European administrators would only end in the creation of a force more dangerous to its rulers than to its foreign foes. As Colonel Collett says : " It would be positive danger to have the entire male population trained to arms. All that we want is to have sufficient reserve men to complete our battalions to war strength, and to keep things going till we have time to train fresh recruits."

More than this our great aim should be, not to have more natives of the country trained to arms than we ourselves can employ to advantage, and at the same time to have a hold on every trained and effective soldier that the country can produce. Our present system, though it gives us no reserves whatever, transgresses both these fundamental principles as, irrespective of the armies of native princes, it disperses among the civil population a large number of men whom we ourselves have trained to arms, and upon whom we have no further hold or claim. Few but regimental officers are aware what a large number of men take their discharge before completing six years service. All, or nearly all, these might be incorporated in a reserve, and, by so doing, we should minimise any danger that there may be in allowing trained soldiers to return to civil life. Then, again, there are thousands of able-bodied pensioners whose services might be utilized in taking garrison duty for troops withdrawn for field service. To incorporate these men, whether short service or pensioners in a reserve force, so far from being a political danger would actually reduce whatever danger they may now present, for, by so incorporating them, we do not train more men to arms, but we retain our hold on those trained soldiers whom our voluntary system permits to return to civil life. This subject will, however, be considered more fully further on. Admitting that without reserves an army cannot sustain itself in the field, the next point for consideration is what are the actual requirements of the Indian army.

It may be said that the Indian army is always more or less on a war footing, and, considering the exceptional nature of our position in Asia, it must ever remain so.

Requirements of the Indian army.

It is, therefore, fully competent to undertake any of the petty campaigns which usually fall to its lot without the application of any special system of reserves, and, as a matter of fact, it always has done so without great inconvenience being experienced. It is only when we find ourselves committed to a prolonged and important campaign like that in Afghanistan that the want of reserves becomes seriously felt ; even then, however, a small reserve not exceeding 20,000 men would probably suffice to meet all demands. But there is always present the possibility of a great war in Central Asia, or at all events beyond the

Indus, and that contingency, though perhaps remote, is so certain and of such vital moment that it must be provided for. In such a case small regimental reserves will be totally inadequate, recruits will certainly be no longer forthcoming, and, unless we have great reserves equal to the drain of several campaigns, an utter and irretrievable collapse will probably ensue. Under these circumstances a reserve is required—

- 1st.—To complete to a suitable fighting strength, say 800 infantry and 450 cavalry, the ranks of all corps ordered on service, while at the same time the depôts of such regiments are brought up to such a strength as may be deemed advisable.
- 2nd.—To maintain corps in the field in an effective condition, that is, to replace casualties for at least one year, or still better for two years, after which lapse of time perhaps recruits may be ready to take the field.
- 3rd.—To perform garrison duty in the place of troops which could not have been withdrawn for field service, if reserves to replace them did not exist.

As regards the first requirement it is most improbable that we could ever place in the field an army mustering more than 60,000 native troops, that is to say, about half the whole native army of the three Presidencies. The depôts of those 60,000 troops should, with a due regard to their efficiency as training schools, and feeders to replace casualties, muster at least 25 per cent. of the force in the field, that is to say 15,000. Then, as to the second requirement, the casualties of an army may be roughly estimated at 33 per cent. per annum, that is to say, we must be prepared for an annual drain of 20,000 men. Now, considering the well-recognized difficulty of obtaining suitable recruits in war time, we may fairly say that for at least two years we can only really trust to reserves to meet that drain. Thus we shall require fully 50,000 men to put half the army into the field, to provide depôts for the regiments concerned, and to maintain a constant supply of fighting men. Of this number, we hope, as will be explained, to obtain 20,000 from the ranks of the army, half only of whom will, however, belong to, and be available for duty with, the regiments in the field, 10,000 we propose to get from the police, and finally 30,000 from the armies of Native States. The whole of these will be men under fifteen years service, and presumably capable of enduring the hardships of a campaign.

As regards our third requirement, the garrison army for India during troublous times would require an increase chiefly in British troops, and, as far as the native garrison is concerned, old soldiers of over fifteen years service, together with the first class reserve men of those corps not employed on service, would with the regiments left behind probably suffice to meet all demands, more especially when we remember that the depôts of troops in the field would, under a proper system, form no inconsiderable item in computing the strength of our garrison army. It follows from the above that our army of 120,000 native troops will have to supply irrespective of what reserves it draws from the police, and Native States a reserve of about 20,000 men under fifteen years service, or, in other words, one sixth of its peace establishment. That is to say, every

infantry regiment should have a reserve of about 140, and every cavalry regiment of 90 men, all of whom should be fit for field service, and this small regimental reserve will undoubtedly suffice to meet all ordinary demands. While with a reserve of 60,000 men from all sources available, *if required*, there ought to be no difficulty in keeping corps in the field up to strength for any reasonable length of time under any circumstances whatever. If, therefore, we can, without inordinate expense, and without great difficulty or danger, organize such reserves, the question of keeping a large army efficient in the field for a prolonged campaign may be considered as fairly solved.

The numbers here estimated may appear extravagant, considering the usual nature and extent of Indian campaigns, but it must be remembered that it is not for ordinary campaigns that a reserve is required. The Indian army being always more or less on a war footing is fully capable of dealing with its ordinary enemies, and a reserve is necessary, *vitaly necessary*, only to meet one special contingency. There is a dark shadow looming athwart our North-West Frontier, which may be said to be our only cause for deep anxiety, but that one solitary cause is sufficient to render it imperative on us to be prepared to meet our great rival with all the strength we are capable of exerting; and, since the struggle will be neither short nor bloodless, we must be prepared to sustain it through several campaigns. Those who admit the life and death nature of the coming struggle will also admit that half measures are useless, and that a large reserve is a *sine quâ non*. It is, however, only under the dire and pressing necessity of such a struggle that it will be at all advisable or necessary to call out so great a force as that here provided for, and in every other case the 20,000 men who have passed through the ranks of the army will be found amply sufficient to meet all requirements. It will, too, be probably sufficient to meet the first and immediate demands occasioned by even a declaration of war against Russia. It is, therefore, only intended to call out and train the great reserve which the Native States will supply *after the actual outbreak of war*. The danger and expense involved in training so large a body of men during peace will thus be avoided, while, at the same time, the difficulty, or rather the impossibility, of obtaining recruits in war time will be overcome by the obligatory service imposed on those Native States which are integral portions of the Empire.

In the next chapter we shall endeavour to show how a reserve may be obtained from the sources indicated, the advantages which may be held out to induce men to enter it, and the terms on which they might serve.

II.

The first and best source from which to obtain our reserves is, without doubt, the army itself. As already stated, we

The best source from which to obtain reserves.

are yearly losing a number of thoroughly efficient soldiers who, having served a few years, take their discharge and are heard of no more—men in the prime of life, the very material for an army reserve.

To secure the services of these men should be our first object, and the question is how can we best induce them to render their services available when needed with due regard both to economy and efficiency. But first of all it may, perhaps, be necessary to show that there is no danger in so utilizing them. In a pamphlet, written a year or two ago on the subject of army organization, Captain Maitland of the Intelligence Branch treated this question very lucidly, and I cannot here do better than quote his words :—

The danger of forming such a reserve a purely imaginary one.

“It is, I may almost say, well known that numbers of men who leave their regiments for various reasons, generally of a family nature, and are now altogether lost to the army, would gladly enter a reserve if some small inducement was held out to them. Proposals for a reserve to the native army have in consequence been made over and over again ; but although all are probably agreed as to its advantages in the abstract, there is, or perhaps was, a strong party who believed the introduction of any such system to be fraught with political danger, and that advantage might be taken of our service, by native princes and others, to train men to be used against us, should an opportunity offer itself for successful rebellion. If such a danger had any reality in it, it would be indeed a formidable objection to the proposal ; but it should be remembered that men, however well trained, are of little avail as soldiers unless efficiently armed, organized, and provided with competent leaders. Twenty or thirty thousand reservists scattered abroad over the wide expanse of India without arms or cohesion, would be far less dangerous than one-fourth of the number added to the troops actually with the colours, since the latter might possibly mutiny, and have their arms in their hands. The contest of 1857 showed us, however, with what ease, as compared to their numbers, the best of native soldiery can be disposed of when deprived of European leadership and command. Finally, we have the native army, and cannot dispense with it. It would be extremely weak policy to neglect any measure calculated to render it more formidable to our enemies, because of a bare possibility that the edge of the weapon might be some day turned against ourselves.”

“It also appears probable that the reserve system proposed would positively stimulate recruiting, as under it native soldiers would be able to resume the management of their land, &c., when it became necessary for them to do so, without throwing away their past service, or losing all chance of participating in the excitement and rewards of war.”

Moreover, the men of whom we would form reservists are actually at the present moment scattered over India, and present as great and even a greater danger than they would if enrolled in a reserve force.

Admitting then that there is no danger involved in the creation of a reserve from the source above indicated, it remains to be seen how best we can attract the men into its ranks.

Before doing so we must lay down as incontrovertible axioms three principles which we must be careful to observe—

- 1st.—That service in the reserve should be entirely voluntary.
- 2nd.—That it should have a local organization in peace.

3rd.—That on embodiment the reservists should revert to their old regiments, or the dépôts thereof.

As regards (1), it must never be forgotten that our army is a mercenary one, whose fidelity depends above all things upon its contentment, and that any attempt to compel men to enter the reserve must sap the very root of its popularity and hence its loyalty. The voluntary nature of our service must be fully recognized and maintained, even though it be detrimental to the rapid formation of a large reserve.

By (2) it must be understood that, except in the event of war, no reservist should be called on to leave his own province, that is to say, his training must be conducted within easy reach of his home.

(3) Would greatly enhance to the popularity of the reserve. No men who have served in the ranks of the Indian army will ever willingly enter the reserve (except for a heavy price), unless assured that, when called on for service, it will be with their own regiments under their old officers and amongst their old friends.

These three principles are absolutely essential to the popularity of any reserve organization in India, and it is on them that the system advocated in the following pages is based.

Before, however, tracing the lines on which a reserve might be formed, it may be as well to state briefly the conditions on which a soldier now serves. A sepoy of the Bengal Army enlists practically for three years only; after that his engagement to serve is terminable at his own pleasure. If invalided he becomes entitled to pension after 15 years service. The result is that on reaching 15 years service nearly every sepoy does his best to get invalided, and thenceforward becomes an incumbrance to the regiment and a burden to the State. No more pernicious system could perhaps be devised than this. It is a direct encouragement to malingering, it is an expensive pension system which gives in return the minimum of service, and instead of providing a reserve it scatters broadcast over the country a number of comparatively able-bodied soldiers on whom the State has no claims. The first step towards forming a reserve is the abolition of our present pension system, and an alteration in the terms of service. The

Suggested terms of enlistment. following are the terms of enlistment suggested in their place :—

- (1) Enlistment to be for three years, subject to the right of the commanding officer to discharge unsuitable men.
- (2) At any time between three and 15 years service the soldier to have the option of taking his discharge, of entering the reserve, or of serving on for pension.
- (3) Pension to be granted after 25 years service, at the ordinary rate, the last five years (for sepoys) being spent in the second class reserve at Rs. 4 per mensem.

The result of adopting these terms would be that all men of bad character, bad shots, or of obviously bad constitution, in fact all men unfit for military service, would be discharged before the obligatory period of service had expired; that a reserve would be formed of men having

And the results of adopting them.

over three, and less than 15 years service, that is, of men in the prime of life; and finally that only those men would become pensioners who, from age and long habits of discipline, would be incapable of becoming a dangerous element in the general population.

From what has been said above, it will be evident that it is proposed to form a reserve of two classes:—

Two classes of reservists to be formed.

- (a) Consisting of men over three and under 15 years service, to be called the first class reserve.
- (b) Consisting of men who have served 20 years in the ranks, and who owe five years more to qualify for pension. Men in this category to be known as the second class reserve.

Men of the first class reserve to be encouraged to join the second class on completion of 15 years service, and to serve in it for another ten years so as to complete 25 years total service.

We now have to consider the terms on which men would enter the reserve, and in doing so we will take the two classes separately—

Conditions of service in the First Class Reserve.

The First Class Army Reserve.

- (1) Soldiers to be eligible for enrolment after three years service unless disapproved of by the commanding or medical officer.
- (2) To be called out for three months training once in three years, and to be liable to embodiment whenever required.
- (3) The training to be conducted as near as possible to the man's home, and liability to service to be limited to the man's own regiment or dépôt.
- (4) Soldiers to enter the reserve with the same rank as that held under the colours, lance rank excepted, and to receive when out for training or when embodied the same pay, staff pay excepted.
- (5) To get no pay except when out for training, but to receive a gratuity of Rs. 40 after every training. All travelling and half mounting expenses being paid for out of the above gratuity.
- (6) To receive on the expiration of their 15 years service that with the colours included, a gratuity of Rs 180 (*i.e.*, one rupee deferred pay for every month's service). If declared unfit for service before the expiration of that period, to receive gratuities in accordance with the present regulations, *viz.*, three months pay after five years, and six months pay after ten years.

To explain this more clearly we will take a hypothetical case: Sepoy

Comparison between the system proposed and the present one.

Dull Singh having concluded three years service in 1884 wishes, for domestic reasons, to return to his home, but considers the reserve sufficiently attractive to enrol his name therein. In 1887, 1890 and 1893, he will have to put in three months training. In 1896 he will have the option of taking his discharge or joining the second class reserve. In return for this he gets Rs. 8 pay during each month's training, as well as

three gratuities of Rs. 40 each and a final gratuity of Rs. 180 on discharge or altogether—

Nine months pay ..	Rs. 72
Gratuities ...	300

Total Rs. ... 372 for twelve years liability

to be shot, which would make his cost to the State Rs. 81 per annum, including travelling expenses and half-mounting, not much considering the value a man usually places on his own life! Had Dull Singh remained on the active list, his pay and half-mounting for the same period would have cost the State Rs. 1,272, or Rs. 106 per annum, exclusive of the pension to which his service might have entitled him. As Dull Singh would be after fifteen years service about thirty-five years of age, and as the expectation of life at that age is twenty-nine years, Dull Singh having malingered successfully, might hope to draw pension for twenty-nine years. That is to say he would probably cost the State Rs. 1,392 in pensions, which, added to the cost of his twelve years service, makes Rs. 2,664 against Rs. 372, the cost of Dull Singh the reservist. In other words one soldier who serves on for pension costs about the same as seven reserve men.

Reasons for and Let us now consider the effects of the above effect of the proposed conditions :—
rules.

(1). Ensures none but suitable and thoroughly trained men entering the reserve, for it will be the commanding officer's own fault if a single unsuitable man is retained.

(2). Three months training every third year would be quite sufficient to maintain the efficiency of the reservist. Once thoroughly trained, the soldier soon picks up his drill again. The saving, too, would be immense. For if you call out the whole force every year you have to employ treble the staff of drill instructors and officers, and you have to arrange for a treble amount of accommodation. By only calling out one-third every year, reserve service is made less irksome, economy is duly observed, and the general efficiency of the force is not impaired, but probably augmented.

(3). This condition is in accordance with the principles laid down as absolutely essential to the popularity and contentment of a reserve force in India. As described further on, the men will undergo their training at certain reserve depôts at convenient centres in every province, and if called out for service will join either their old regiments, or the depôts of their regiments.

(4). This proposal will not have any material effect on the general scheme, as very few who attain to the non-commissioned grades would be desirous of entering the reserve. Still there are circumstances under which a man may deem the step desirable, and it seems hard in such cases to deprive him of the chance of entering it. Such non-commissioned officers too might be made useful in various ways, in case the reserve were embodied—as havildars and naiks at the various depôts, as recruiting agents, as subordinates in transport trains, as hospital orderlies in general and field hospitals for the care of arms and clothing,

&c. In short, suitable employment might easily be found for a great many more non-commissioned officers than are ever likely to enter the reserve.

(5). Herein lies the pith of the whole scheme. The usual method of direct monthly or annual payments is not suitable to India. It is not desirable to pay men in advance for liabilities they may afterwards evade. You cannot tell whether a man will redeem his obligations until the occasion arrives, or his period of service is completed, and, unless he does fulfil his obligations, direct money payments will have been simply thrown away. It cannot be too strongly insisted that the system of direct annual payments, even if it induces men to flock to the reserve, is not one that with any degree of certainty secures the attendance of the men when required for active service. It is true in England, under the same system, the reserves when called out turn up almost to a man, in spite of great hardships endured by many in so doing, but in India we cannot rely on the same sense of patriotism as an incentive to obey the call of duty. The ignorant cultivator on the banks of the Ganges or the Sutlej would deem it better to give up a miserable monthly retaining fee than leave his family and home to encounter the hardships and dangers of active service. It is true that with an agricultural population, such as ours, we can always lay our hands on the men, but it is precisely at such critical moments, when men's minds are excited, that in a country like India it is least desirable to employ measures of coercion.

At such times we want the men to come forward voluntarily, attracted by the emoluments dependent on their appearance, rather than under the compulsion of the policemen and the magistrate.

If, on the other hand, we do not give that regular periodical pittance called reserve pay, but give a man a handsome gratuity every time he comes out for training, instead of regarding the training as an irksome duty he will look on it as an easy means of earning the price of a cow or pony, and even if after all he fails to meet his obligations, when called out for service, the loss to the State will be comparatively trifling, Rs. 192 at the very most, that is the cost of three trainings and three gratuities.

(6). The prospect of so easily earning a lump sum of nearly Rs. 200 is no light inducement to a sepoy. He has been well paid for his trainings, and the contingency of being embodied appears very remote, especially as not more than half the army will ever be wanted for active service. On the other hand, the State will have the advantage of only paying that sum to those men who have completed their obligations. It will be payment for past services not for future liabilities, as in the case of direct wages. A system of gratuities on completion of service is, we repeat, the only one which gives us any real hold on the men. They are mercenaries and will not return to the colours from motives of patriotism; you must bribe them with love of "pice." If you give monthly wages, as with the reserve at home, the man will doubtless draw that pay as long as a short training is the only obligation imposed, but the chances are he will readily forego it if called on for active service, more especially towards the end of his time. You *must* offer terms that will make it worth a man's while to come forward of his own accord. A big sum down on completion of reserve service may perhaps effect this. The

man will probably argue to himself : " I have served all these years to get this money, and now I shall lose it if I do not go."

Such are the conditions we propose for the first class reserve, and if our army of 120,000 men can supply 20,000, or one-sixth of its total number on such terms, those conditions will have effected their object. Now $\frac{1}{6}$ th of an infantry regiment is about 140 men, and as most of those men who do not serve on for pension leave the service after about five years, the average reserve service of a man may be roughly estimated at ten years, so that, allowing for casualties, every regiment should annually pass about sixteen men into the first class reserve. This should not be difficult.

Presuming then that there will be no difficulty in creating and maintaining a first class reserve of 20,000 men trained in the ranks of the army, we have now to investigate those other Sources from which it may be possible to organize a reserve fit for active service. Those sources are the police and the armies of Native States.

The police force in India musters over 190,000 men, partially drilled and disciplined and recruited generally speaking from the same classes as the soldiers of our native army. In the North-West Provinces, Oudh and the Punjab alone, there are 100,000 police recruited almost entirely from military castes, and certainly 10, or even 20 per cent. of those could with a very short training be turned into excellent soldiers. In fact, there is no reason why suitable inducements should not give us the very pick of the whole force. Of course it is obvious that only a small portion of the police force could be spared for the army reserve, as it is precisely in periods of emergency that this force can least afford to be drawn upon. A certain proportion, however, might be spared, as there are many duties usually performed by the police, such as jail and treasury guards, escorts, &c., in fact most duties not of a detective nature which might on occasion be just as well performed by old soldiers of the second class army reserve.* If then the police gave to the army a reserve force of 10,000 men, it might be on the understanding that the drain then caused should be at once filled up by the employment of a like number of the second class army reserve men in police duties. That is, in war time the police might give to the army the flower of its youth, while the army might give to the police a body of disciplined veterans no longer fit for the privations

* Since writing the above, the report of the Army Commission has been published in the *Pioneer*. From this it appears that the Commission were of opinion that—

"A reduction in the cost of the reserves will be gained if any large proportion of the first and second class reserves are employed near their homes by the civil Governments as policemen, as jail guards, on railways, and in other capacities, where disciplined men of good character would be of great use. The several local Governments who have favoured us with replies on this point, say that they would be ready to employ reservists in civil departments of the Government thus—

The Bombay Government would employ	...	1,500	} Total 7,200."
The Bengal Government	...	1,300	
The Punjab Government	...	1,500	
The British Burma Government	...	900	
The Central Provinces Government	...	1,500	
The Berar Government	...	500	

This is hardly the same proposal, but it shows the feasibility of the scheme.

and hardships of service in the field. Such an exchange would hardly effect the general efficiency of the police, while it would undoubtedly add to the military resources of the empire.

The police reserve should, as with the militia reserve at home, be obtained by offering certain inducements to men in the force to volunteer for general army service in time of war. A militia-man is given a certain bounty as a retainer to secure his services for the regular army in war time. In like manner the police sepoy or sowar might be given a retainer which would induce him to enter the army reserve.

The following conditions of service are suggested :—

<p>Conditions of service for the police reserve.</p>	<p>(1). The first class army reserve to be open to all men of the police force over three, and under five years service, who fulfil the requisite physical conditions.</p>
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(2). Service in the reserve to be for twelve years.

(3). All policemen entering the reserve to receive Rs. 2 reserve pay per mensem over and above their ordinary pay in the police.

(4). All men on first enrolment in the reserve to be sent to a regiment of the regular army for six months training, and to be called out for one month's training once in every three years, this periodical training being conducted at a reserve centre.

(5). The pay during training to be fixed at Rs. 10 per mensem ; that sum to cover expenses incurred by additional uniform.*

Of course if more men volunteered for the reserve than the percentage laid down by Government, either the reserve pay might be reduced, or the men might be selected by committees appointed for the purpose, so that the more volunteers the system attracted the better would be the physique of the reserve, or the less would be its cost.

The objections to giving reserve pay which were so strongly insisted on as regards men who entered the reserve from the army do not hold good in the case of the police. The men have not been merged in the ocean of civil life but are still ready at hand, and actually in the service of Government. There appears, therefore, to be no reason why, what is after all the simplest method of payment should not be applied to that portion of the reserve which comes from the police.

As regards training, it must be admitted that the police force itself cannot be considered a satisfactory school, and nothing less than a six months thorough preliminary training with a regular regiment will ever make the police reservist an efficient soldier fit to take his place in the ranks of a corps ordered on active service. Once thoroughly trained, however, there would be no urgent necessity for calling out the men for the somewhat prolonged triennial training which is demanded of the ordinary reservist, for the police reserve will always be under semi-military discipline, and consequently will not so rapidly deteriorate as that portion of the reserve which has abandoned itself to civil pursuits. One month's training every three years ought certainly to suffice to keep the police reservists efficient.

* There is no reason why there should be any additional expense for uniform, beyond perhaps that of a pair of boots. The police uniform might still be worn during training.

Every man will thus put in three months training during his period of service in addition to six months preliminary training.

Cost of the police reserve. The cost of this may be easily estimated :
 9 months training at Rs. 10 per mensem = $10,000 \times 90 = 900,000$
 11 years and 3 months reserve pay at
 Rs. 2 per mensem = $10,000 \times 135 \times 2 = 2,700,000$

Total ... 3,600,000

or Rs. 3,00,000 per annum which would make the cost of each reservist from the police about Rs. 30 per annum, or rather less than the cost of a reservist from the ranks of the army, and considerably less if the cost of the latter's three years training in the ranks be added to the cost of his 12 years reserve service. Admitting then that there are no insuperable objections to enrolling a proportion of the police into the

reserve, and recognizing the economical advantages of the measure, Government might allot the following quotas of police reservists to the different provinces of the Empire :

Punjab	...	2,000	or 10 per cent of the police force.
North-West Provinces, Oudh and Behar	...	4,000	" 5 " "
Bombay, Madras, and the Central Provinces	...	4,000	" 5 " "
Bengal and Orissa	...	Nil	} The police in these provinces come either of unwarlike races, or cannot be spared from the semi-military duties in which they are engaged.
Assam	...	Nil	
Burmah	...	Nil	

The last source with which we have to deal is that immense army which the Native Princes of India deem it necessary to maintain. The aggregate of these armies may be reckoned approximately as 240,000 infantry and 60,000 cavalry.* Many or rather most of these are irregulars of the most worthless description, still the material is often good, and a picked proportion might very soon be turned into as valuable troops as any we possess.

As at present constituted the armies of the Native States are a recognized political danger to the empire, and any measure which would tend to render these armies more efficient would only augment that danger. It would, therefore, be simple madness to entertain any scheme by which the quality of these irregular levies should be so improved, that a proportion of them might be permanently embodied in a reserve and fitted to take their place in the ranks of the army immediately on its mobilization for war. But we should endeavour to apply to them some scheme which would in no way increase, but rather tend to diminish whatever danger now exists. This might perhaps be done by taking from them in time of war a proportion of their best men, and then and there training them for the first time in the use of our weapons. Of course without previous training 30,000 swashbucklers would not be

* These numbers are under-estimated. It appears that the Native States maintain over 380,000 men.

ready to join the ranks for some little time, still there would be 30,000 fewer men under arms in the Native States, and within nine months the whole of that levy might be fitted to take the field. Moreover the whole of this 30,000 would be by no means inefficient from the commencement. There are certain States, such as Hyderabad, Gwalior, Indore, Kashmir, Mysore, Kolapore, Baroda and some of the Sikh States which keep troops who, though poorly armed, are very fairly disciplined and extremely well drilled. Probably there are 60,000 such troops who would only require five or six weeks training to take their place in any of our native regiments. Ten per cent. of these 60,000 would give us a reserve of 6,000 men available for embodiment within a very short time, while ten per cent. of the remainder would give us 24,000 available within nine months. Of course it may be argued that we have now no claims on the services of these men, but that is no reason why we should not have claims in

Justice of demand- future. The Native States of India owe their
ing military aid from autonomy and their security to the grace and pro-
Native States. tection of the paramount power, and no one can

pretend that they ought not in justice to the general population of India contribute their quota to the defence of the empire, and it is an injustice to two hundred millions of people not to exact that measure of assistance. In justice, therefore, if not from policy, we might insist on the liability of all Native States to furnish a proportion of their armed force for the general defence whenever required.

Then, even if the principle of feudal service be conceded, it may very properly be argued that the individual sepoy or sowar is somewhat harshly treated in being compelled to serve in the ranks of the Imperial Army, but the liability to such obligations might easily be made the

Conditions of service. condition of service in all native armies, and the Imperial Government could certainly afford to offer such inducements and advantages as would fully compensate the soldier thus called on to serve it. The advantages we might offer are :—

- (1) A gratuity of Rs. 30 on embodiment.
- (2) Full pay and batta on the same terms as our own troops whilst embodied.
- (3) A gratuity of six months pay on discharge.
- (4) Pension or family pension if incapacitated by service or killed.

Only men of between 3 and 15 years service should be entertained, and then only if they thoroughly fulfil all medical requirements. After inspection and enrolment they should be despatched to the nearest regiments for training, on completion of which they might either be drafted off to corps in the field or to the dépôts of such corps.

It will be said, and with perfect truth, that native chiefs would much prefer to employ their men in regularly organized bodies as was done by some of the Sikh States during the Afghan war, and no doubt such a method has the advantage of great simplicity, but it is not one on which reliance can be placed. No doubt certain States can boast of very presentable troops, but probably there are none on which a General could in critical times place the same implicit reliance that he would on our own battalions and squadrons. That element of uncertainty must detract more or less from the value of feudatory troops employed in

distinct integral bodies, and moreover their employment in such a manner does not in any way provide a reserve for the troops in the field. It would seem that the least dangerous and most advantageous method of employing the troops of Native States during war time is to incorporate them in the ranks of the regular regiments of the Indian Army. If then the principle be once conceded that Native States should contribute to the general defence, there would be little or no difficulty in making a very valuable reserve of the overgrown armies which Indian princes now so uselessly maintain. It would, too, be a most inexpensive reserve, as it would cost the Suzerain nothing at all unless actually called out. In fact it would in peace time have no existence except in so far that every Native State would be actually maintaining one-tenth of its forces for the future benefit of the Suzerain, while in war we should obtain the services of a large body of mature men at an almost nominal price.*

As an illustration of the proposed scheme for utilizing the forces of Native States, let us take the case of Mysore. That State has four regiments of 'Bar' infantry and three of 'Sillidar' cavalry, say 4,000 regular troops. All these are fairly disciplined and trained, and some of these 4,000 might in a month or two be formed into excellent soldiers. If the quota of the State were fixed at one-tenth, we should have 400 men placed at our disposal immediately on the outbreak of war, and if by any arrangement those 400 could be men specially picked, we should get a most valuable contingent. This contingent should be at once sent off to Bangalore or elsewhere, and attached to corps in garrison for training in musketry, etc., etc., on completion of which they would be drafted off to the different Madras regiments on service, or to the depôts of such regiments as circumstances might dictate.

Conditions of service in the Second Class Reserve.

- (1) The second class reserve to consist of two categories :—

Conditions of service in the second class reserve. (a) Men transferred direct from their regiments on completion of 20 years service with the colours.

(b) Men transferred from the first class reserve on completion of 15 years total service.

- (2) Men of class (a) to receive Rs. 4 per mensem pay and to be transferred to the pension list after 25 years total service. If invalided before the expiration of the full period to receive Rs. 3 pension instead of Rs. 4.
- (3) Men of class (b) to receive neither pay nor pension, but to be given a gratuity of Rs. 100 on completion of 25 years total service.
- (4) The second class reserve never to be called out for training, but to be liable to embodiment for garrison duty in their own presidencies, or for duty in the police force.

These conditions require some explanation. It may be said that the first method of creating a reserve is fictitious, in that by the proposed pension rules we have a right to the soldier's services till he has put

* Attention is invited to Appendix II, where this subject is more fully discussed.

in 25 years duty, and that we are simply bringing him on the pension list five years before his time. That we are practically giving him Rs. 4 pension from the day he completes 20 years service. There is, however, another way of looking at it. A soldier of 20 years service is rarely fit for prolonged campaigning; if therefore we keep him on in the ranks we have to pay him Rs. 10 a month for doing ordinary garrison duty, since if his regiment be sent on service he assuredly will be left at the *dépôt*. Rs. 10 a month on such terms is a very high wage, and it would be really far cheaper to let the veteran return to the shade of the village peepul, while a younger man took his place in the ranks. The pay of a soldier under three years service is only Rs. 7, which, added to the Rs. 4 reserve pay of the veteran, makes only one rupee more than the pay of an old soldier present with the colours, so that practically by the expenditure of an extra rupee we get two soldiers instead of one. A young soldier and a reservist for garrison duty, in the place of one old fellow heartily sick of doing sentry-go. It is useless considering what would be the extra expense for the last two years in the second class reserve, as it may be taken for granted that under the present rules every sepoy is pensioned before attaining 23 years service. The system would not only add to the efficiency of regiments, but would also certainly be popular as setting aside the chance of a great war; it would in the sepoy's eyes be equivalent to pension after 20 years service. It is a system also which is absolutely reliable, as any soldier failing without just cause to meet his engagements would lose all claim to pension.

The second source, namely, time-expired men of the first class reserve is not so promising, as experience alone will tell us what proportion of men will accept service on the conditions named,—in fact it might be necessary to reduce the term of service by three or four years if the prospect of getting Rs. 100 ten years hence should not prove sufficiently alluring. It may even be questioned whether the services of these men will be worth the money. The question may, however, be regarded from another point of view, the gratuity of Rs. 100 may be looked on as security for the loyal behaviour of the men. As already pointed out the great blot of our present system is that it scatters throughout the country a large number of trained soldiers on whom we have no further claim or hold. Any system which secures the loyal conduct of these men removes that danger, so that, apart from the actual value of their services, present or prospective, in the second class reserve, there is the negative value of their subtraction from the elements of disorder. On the whole, therefore, it would seem desirable to induce men of the first class reserve to extend their service until from age and rust they become powerless for evil.

Men of this class, however, could not be paid a monthly wage as in the case of old soldiers serving on for pension, for since they have no pension to lose monthly pay would in their case be no security for their appearing when called out. On the other hand a gratuity on completion of service would only be due to men who had observed their engagements, men who had failed to do so would not have cost the State one single *anna* whilst in the second class reserve!

The duties of the second class reserve when embodied would be of a purely sedentary nature; the efficiency imparted by periodical trainings is therefore unnecessary. Every second class reservist would, of course, be on the rolls of the reserve centre to which his district is affiliated, and to it on mobilization he would first proceed, there he would receive his final orders. The first demand on the second class reserve would be the police forces and 10,000 men would first have to be drafted off to fill the vacancies in that force arising from the absorption of the police reserve in the rank, of the army. The remainder would either be sent to the depôts of their old regiments where they would form a permanent nucleus of old soldiers amongst a constantly shifting body of recruits and first class reservists, or they might on great emergencies be formed into provisional battalions for garrison duty within the limits of their own Presidency.

We have now enumerated the various classes of reservists that might be raised without any overwhelming cost to the State, and without any interference whatever with our present army organization. It will be as well here to recapitulate them :—

Recapitulation of *First Class Army Reserve* liable for service all the several proposals over the world in time of war—made.

- (a). Old soldiers over three and under fifteen years service who have voluntarily left the colours.
- (b). Policemen who voluntarily accept the conditions of service in the reserve.
- (c). A proportion of the armies of the Native States compulsorily transferred to the reserve under treaty, on mobilization of the army.

Estimated strength of the above :—

Old Soldiers	...	...	20,000
Police Reserve	...	...	10,000
Native States	...	...	80,000

Total ... 60,000 men.

Second Class Army Reserve liable for garrison duty in India or for duty in the police—

- (d). Old soldiers from the ranks after twenty years therein.
- (e). Old soldiers from the first class reserve after fifteen years total service.

It is impossible to make any estimate of the numbers obtainable under either heading, but probably we might reckon on at least 20,000 men after the system had been a reasonable time in force. Under the present system over 3,000 men pass annually to the pension list,* we might therefore safely reckon on at least 2,000 men annually passing from the ranks to the second class reserve, which would in five years give us 10,000 men at the very least, while as regards the

* This, it appears, has been considerably under-estimated. According to the Army Commission Report an average of 7,778 native soldiers leave the army annually, of whom 4,612 retire on pension. We may therefore reckon on at least 15,000 men of the first category instead of 10,000.

second category, if one-half of the first class reserve at the end of their time accepted service in the second class we should in course of time get another 10,000 men from that source.

We thus get 60,000 men in the first class and 20,000 in the second class to feed an army of 120,000 men. Supposing that only half of that army is employed on active service, we have to deduct from the first class 10,000 men, the regimental reserves for the half left in India, and from the second class 10,000 men who are absorbed into the police as substitutes for the police reserve, but we shall have still 50,000 to feed the field army, a number which the most ardent reformer must admit is ample to meet the demands of the most protracted campaign, and 20,000 to add to the garrison army of India, and that exclusive of the troops at the depôts which would under a system, such as that here contemplated, form no inconsiderable item, mustering as they would at least 15,000 men.

III.

In the previous chapters it has been shown from what sources reserves might be obtained; it now remains to be shown how those reserves are to be organized, trained and mobilized.

(1) They may be trained with their own regiments; (2) or every regiment may have its own permanent local depôt as in England; (3) or they may be trained by the nearest native regiment of the same branch of the service; (4) or they may be trained at special reserve centres.

The first method is impracticable in so vast a country as India, as the regiment might be a thousand miles away from the man's home; moreover, should the regiment be called away on active service, no suitable organization would remain for mobilizing the men of the reserve.

The second method would be ridiculously extravagant, in fact utterly out of the question, as it would involve a complete re-organization of the army. The formation of class regiments of several battalions, recruiting for each regiment from a defined area, and other radical changes are perhaps desirable but at present quite unattainable.

The third is feasible but obviously unadvisable. The commanding officers of corps who had to conduct the training would have no direct interest in any but their own reserve men, and the training would therefore in many cases be inefficiently conducted; there would also be no organization to meet a general mobilization of the army.

The fourth is the only reasonable method which is applicable to the army as it now exists. Reserve or training depôts can be formed at convenient centres throughout India. They would of course be situated in the centre of those regions which furnish the largest number of recruits, and a certain number might be fixed on for each

The formation of reserve centres or depôts advocated.

Presidency. The following stations are suggested as suitable for the formation of reserve centres :—

BENGAL.	MADRAS.	BOMBAY.
Benares. Lucknow. Moradabad. Agra. Umballa. Amritsar. Jhelum. Peshawur.	Vizagapatam. Secundrabad. Palaveram. Bangalore. Trichinopoly.	(?) Hyderabad, Sind. (?) Ahmedabad. Poona or Tanna. Belgaum. (Perhaps Ahmednagar) or Assirghur might be substituted.)

Each reserve centre should have its commandant and a small permanent staff.

Establishments to be maintained. The following would probably be found sufficient for all purposes :—

- 1 Commandant, with Rs. 300 staff.
- 1 Adjutant and Quartermaster with Rs. 200 staff.
- 1 Native Adjutant.
- 1 Drill Havildar.
- 4 Pay Havildars.
- 1 Drill Naik.
- 20 Sepoys.
- 2 Buglers.

The commandant might be a colonel whose period of regimental command had expired, just as at home such officers are appointed to brigade depôts. Such appointments would give suitable employment for that ever-increasing class, the unemployed ex-commandants. The appointment should be for three years.

The adjutant might be a captain who had had experience as a regimental adjutant. On promotion such officers revert to Rs. 100 staff unless fortunate enough to get a wing; the appointment therefore of adjutant to a reserve centre would be one much sought after. The appointment might last for five years, or till the officer reverts to a wing command.

The commandant and his staff officer should be responsible not only for the payment and training of the reserve, but should be the channel through which should be conducted all matters appertaining to mobilization and the despatch of reserve soldiers to their regiments. They might also be utilized as staff officers of pensioners, all men living in the district affiliated to their centres being in their payment, a measure which would considerably reduce the work of the Pay Department, and it may be added its cost.

During training this permanent staff would have to be augmented by native officers and drill instructors from regiments in the neighbourhood, and small additional staff allowances would have to be allotted for the purpose. An annual allotment of five hundred rupees per depôt would probably suffice, as that would cover the cost of four native officers on twenty-five rupees extra staff and of 16 non-commissioned officers on four rupees staff, for three months.

As regards the medical charge of dépôts, it would be a needless extravagance to maintain a doctor and a complete hospital establishment—not to mention a special separate hospital, for it must be remembered that for nine months of the year only the permanent staff will be present. The cheapest plan would appear to be to attach the dépôt for medical treatment to a native regimental hospital in the same station, or failing that to the civil dispensary, allowing the medical officer in charge Rs. 100 staff for the additional work thus entailed on him.

The training should take place at the end of the cold weather (February to April), so as to interfere as little as possible with agricultural operations.

Where no vacant lines or barracks exist, camp equipage might be issued temporarily for the accommodation of the men, but permanent buildings would in any case be necessary for the permanent staff and for store-rooms, bells of arms, &c., &c.

The men when out for training might be organized in four companies, as, supposing the aggregate number of the first class reserve from the army and police amounted to 30,000 men, there would probably be between 500 and 700 men out for training at each of the dépôts every year.

The arms and accoutrements to be kept in store at a dépôt should be limited to about one-third of the number required for all the first class reserve on the rolls of that dépôt.

This number would meet the requirement of the annual trainings, as one-third only of the men would be called out each year, and in the event of a general mobilization fresh arms, &c., would be obtained as required from the arsenals.

The number in dépôt charge would certainly be sufficient for the immediate equipment of the first drafts despatched to the seat of war, while to keep a large number in store would be to incur unnecessary risk. It is, however, a *sine qua non* that a certain proportion of arms (one-third as suggested) be kept at the dépôts, as otherwise there will be much delay in their issue during times of great pressure.

The uniform of reserve soldiers should be kept up by the men themselves. It need only consist of a paggri, Khaki blouse and pyjamas, pattis and native shoes.

The pay and gratuities received by the men when called out for training are liberal enough to meet charges thus incurred.

As regards cavalry an undeniable difficulty exists. If you do not maintain special dépôts with an establishment of horses the training must needs be incomplete. If, on the other hand, you do maintain such an establishment considerable expense will be incurred. Moreover, as the cavalry reserves would not number more than about 4,000 men, it would be ridiculous to maintain more than two or three reserve dépôts for that arm, and with so few centres the distances to be travelled by reserve men would be inconveniently great. It appears, therefore, that as regards the cavalry the simplest method would be to carry out the training of reserve men at the nearest cavalry station. As far as the cavalry are concerned, therefore, the reserve centres would be merely offices for the

registration and payment of reserve troopers, and from which the reserve men would receive orders as to the regiment with which they were to be trained. On mobilization, however, it would be necessary to adopt some special temporary organization, as half the regiments at least will be no longer available as training schools. Probably the simplest and cheapest plan would be to send the men at once to the dépôts of their regiments, but those dépôts would in that case have to be placed on a far more substantial basis than they would be under present conditions. This, however, is a very difficult question, which requires the careful consideration of experts to whose attention it may well be left.*

Supposing the Benares circle comprised the province of Bengal as well as the civil divisions of Allahabad and Benares, all reservists and pensioners living in that area, whether cavalry or infantry, would be inscribed on the rolls of the Benares reserve centre. The infantry reservists would, as a general rule, be trained at the Benares dépôt, but the cavalry reservists would put in their training with the cavalry regiments nearest to their homes.

For example, men living in the Goruckpore or Tirhoot district would naturally proceed to Segowlie for training; those in the Mirzapore district to Allahabad, and those in Hamirpur to Cawnpore. We have said above the infantry reservists would, *as a general rule*, be trained at the reserve centre, but there would appear to be no objection to, and some advantage in reservists being trained by, their own regiments when those regiments are within easier reach than the reserve centres to which the men are affiliated. For instance reservists of the 5th N. I. living in either the Busti or Goruckpore districts might serve their training with the 5th N. I. at Goruckpore, rather than proceed to the reserve centre at Benares.

To summarize what has been already said: the duties of the commandant of a reserve centre may be briefly stated as follows:—

- (1). To keep rolls of all first and second class reservists within their circles.
- (2). To warn all first class reservists for training when due.
- (3). To supervise the training of the infantry reservists.
- (4). To act as paymaster to all reservists and pensioners within their circles.
- (5). To discharge all reservists who may become unfit for duty before the expiration of their service.
- (6). On mobilization, to see that all reservists are duly warned, to arm and equip men as they arrive at the centre, and to despatch them to their regiments or regimental dépôts in accordance with the orders received.

* Many cavalry officers are of opinion that it is useless to try and maintain cavalry reservists. The Army Commission say:—

We do not propose to constitute any first reserves of cavalry, because we consider that the country cannot afford to maintain a large reserve of horses. Native cavalry reservists who had no exercise with their horses, would soon become inefficient. We think, however, that the change in the pension rules and the liability to garrison service in the second reserve, should, for the future, apply to cavalry as well as to infantry.

Having in the preceding pages described the organization which it is recommended should be applied to the reserve, mobilization.

it will now be instructive to investigate more closely the manner in which mobilization would be conducted, presuming that the system is in thorough-working order, and that reserves, as contemplated in this paper, are actually in existence. For an ordinary campaign, such for example as a Nepalese war, all that need be done is to call out the regimental reserves of corps ordered on service, but, supposing a more serious enterprise, and that half the native army is detailed for service beyond the Indus, the entire scheme of mobilization will have to be brought into play.

Immediately on mobilization being decreed the civil authorities throughout India would issue notices directing all *army* reservists to report themselves forthwith at the reserve centres. The police superintendents would despatch their *police* reservists to the reserve centres to which their districts are affiliated, while the Residents at native courts would take measures for selecting and forwarding the required contingents, or certain proportions of them, to those military stations at which it might be decided to conduct their training.

It will be as well to take examples illustrating this general plan of mobilization, from which a rude idea of what would actually occur may be gathered.

Example I. The 1st N. I. at Pindee is warned for service. This regiment has 832 natives of all ranks present with the colours, and 140 first class reservists on its rolls.

Examples illustrating the general System. Of the men present 740 are passed for field service, 92 are left at the regimental depôt which remains at Pindee. Orders are issued from head-quarters that all infantry regiments are to take the field 800 strong, and to leave behind depôts of at least 200 men. Sixty men are therefore required to complete the former, and 108 to complete the latter. To meet these demands, 120 say out of the 140 first class reservists duly appear at the several reserve centres in Hindostan, and 130 police from the districts affiliated to one or other of the Bengal reserve circles are allotted to the 1st N. I. The whole of these 250 men having been armed and equipped at the reserve centres are forwarded to Pindee. sixty are at once selected and sent on to join the regiment, the rest remain at the regimental depôt which now musters 282 men. After a certain lapse of time, war and disease having thinned the ranks, another draft is called for and is sent from the regimental depôt at Pindee, which meanwhile has had its strength considerably augmented from the reserves supplied by Native States. It may be roughly calculated that each regiment will require a draft of 100 men every five months, at which rate the depôts can easily maintain a constant supply after the training of the Native States reserves has been completed.

Example II. The 1st B. C. at Cawnpore is warned for service on the Kandahar line. This regiment is 550 strong, of which 470 are fit for service; but supposing cavalry regiments are ordered to take the field, 450 strong leaving depôts of 150 men, it will require only 50 men to complete it. There are ninety first class reservists on its rolls living chiefly in the Agra and Moradabad circles; these reservists are instructed by written

orders from the reserve centres to proceed direct to the regimental depôt at Cawnpore. About eighty do so, which brings up the strength of the regimental depôt to 180 men. In course of time this is augmented by some 200 men from the cavalry of Native States, but, on the other hand, drafts of fifty or sixty men are sent two or three times in the year to the regiment.

Example III. The Palaveran reserve circle has on its books at the commencement of war the following :—

		Infantry.	Cavalry.	TOTAL.
First Class Reserve ...	{ Army ...	900	100	1,000
	{ Police ...	250	...	250
Second Class Reserve ...	.....	800	80	880
	TOTAL ...	1,950	180	2,130

Two regiments of Madras cavalry and six of infantry are ordered on service. All the first class reserve men of those regiments are at once equipped and despatched to their corps, or the depôts of their corps if the regiments should have already left. That disposes of, say, 180 infantry and 50 cavalry of the first class reserve. The police reserve of the Palaveram circle are directed to join the two infantry regiments ordered on service from Madras and Bellary, the other regiments getting their police reserve from those other reserve centres which happen to be nearest to them. That leaves to be disposed of :—

		Infantry.	Cavalry.	TOTAL.
First Class Reserve ...	Army ...	720	50	770
Ditto ditto ...	Police ..	Nil.	.....	.....
Second Class Reserve ...	.....	800	80	880
TOTAL ...	.....	1,520	130	1,650

The remaining first class reservists are now all despatched to the several regiments to which they belong—a measure which considerably augments the strength of the garrison army and facilitates the future despatch of additional regiments on active service ; while of the second class reserve 250 are handed over to the Inspector-General of Police in lieu of the police reservists mobilised in the circle ; the remainder are either formed into a provisional battalion for duty at Palaveram and the Mount, or are sent to augment the strength of regiments in garrisons near at hand. The exact course to be pursued must depend on such circumstances as accommodation, number of British officers available, duties to be performed, &c., &c.

Example IV. The 2,000 Punjab Police are divided amongst the four reserve circles belonging to the Punjab, so that on mobilization each reserve centre will have approximately 500 men attached to it. For example, all the Police Cis-Sutlej might be affiliated to the Ambala reserve centre. On mobilization the District Superintendents of Police Cis-Sutlej would at once send all their reservists direct to Ambala, indenting at the same time on the Ambala dépôt for a corresponding number of the second class reserve.

There are 27 regiments belonging to the Punjab; supposing sixteen of these were ordered on service, each reserve centre would be directed to divide its police reserve among four specified regiments; the police belonging to any one district being all, as far as possible, detailed for duty with the same regiment—an arrangement which would greatly simplify all correspondence between the police officials and the military departments concerned.

We now come to the all important question of
 Cost of the proposed system. cost.

In Chapter II it was shown that the average cost of a reserve soldier of category (a) would be about Rs. 31 per annum; 20,000 men at Rs. 31 — Rs. 6,20,000.

The cost of the police reserve was shown to be Rs. 8,00,000 per annum. The Native States reserve costs nothing till actually called out for service. The cost of the second class reserve category (d) need not be reckoned at all, as under the present pension system men receive their pension of Rs. 4 per mensem on an average before reaching twenty years service. 10,000 men in category (e) would cost altogether Rs. 10,00,000, or annually about Rs. 1,00,000.

The total cost of the two reserves may therefore be roughly reckoned at Rs. 10,20,000 per annum. To this must be added the cost of, say, 17 dépôts, which may be roughly taken at Rs. 3,20,000 as shown in the Appendix.

Total cost of the reserve Rs. 13,40,000.

If the country cannot afford this extra expense, and yet insists on a reserve, the only way to make ends meet is to reduce the strength of the active army. In a country where conscription is impossible, and where the whole fabric of army service rests on a voluntary basis, a reserve must always be an expensive luxury, and it is ridiculous to suppose you can form one on the economical lines of a European model. If the strength of the active army must be reduced so as to meet the additional cost of the reserve, there are two ways of doing it. Either we must disband some half a dozen regiments, or else the strength of each troop and company must be reduced by nine or ten of its rank and file. Perhaps, considering the existence of a large reserve readily available, the last would be the least disadvantageous expedient, more especially as for a small army a reduction in the number of cadres maintained is always unadvisable.

The terms in which the subject of this essay are expressed, particularly stipulate that the system advocated be applicable to the army of India

as now organized. No attempt has therefore been made to interfere with

The system applicable to the army as at present organized.

that organization, so that the system proposed in these pages could be applied to-morrow to the army as now constituted. It would only be necessary to alter the present pension rules to meet the new conditions, to form some 17 reserve centres, to take steps to form the police reserve, and finally to make treaty arrangements with Native States by which the quotas to be supplied by them in war would be duly regulated. The result would be that within one year a very considerable reserve force would be added to our military resources.

In the first place all men over twenty years service would be at once transferred to the second class reserve ; a similar number of the police force fulfilling the requisite conditions would be enrolled in the first class reserve, and sent to regiments to receive six months preliminary training. Each year two or three thousand men would in like manner be transferred to the second class reserve, and a similar number from the police enrolled in the first class, with the result that in three or four years at most we should have brought up the police reserve to its full authorized strength, and should have sufficient men in the second class to meet the demands of the police force. If it were desired to accelerate the formation of these reserves in the first instance, that might easily be done by transferring all men over nineteen or even eighteen years service to the second class reserve until the requisite numbers had been obtained.

Then as to the first class army reserve. A very large number of men now present with the colours would probably at once accept its terms, which terms might also be extended to men who have taken their discharge within the last three years, and who fulfil the requisite conditions, provided such men have at least half a dozen years yet to serve in the first class reserve. There would be little or no difficulty in communicating with these men through their old regiments, and probably not a small proportion of them might be induced to enter the reserve.

Finally, there would be the armies of Native States in whom an immense reserve force already exists if we choose to apply the terms of such treaties as those advocated in these pages. Nor does the proposed system violate any one of the three principles laid down as incontrovertible—

And in accordance with the general principles laid down for guidance.

- 1st.—It is purely a voluntary one except as regards the armies of Native States, and even then it is only obligatory as regards the State, for the men voluntarily enter the army of that State, and their liability to be called out for service is merely one of the ordinary conditions of a soldier's lot.
- 2nd.—It has a local organization in peace as all trainings are conducted either at reserve centres or with regiments within reasonable distance of the men's homes.
- 3rd.—The principle of regimental service for old soldiers sent into the field is duly observed as all the first class army reserve are on the outbreak of war transferred to their old regiments or the dépôts thereof.

The second class reserve men never quit their own presidencies, while the police and Native States reserves are naturally for general service, being bound by no special ties to particular regiments. The measures suggested are not only in accordance with principles which must be observed in forming reserves in a country like India, but they provide us with a large force on reasonably economical terms, and without adding one iota of danger to existing conditions. The army reserves are taken from the sources which actually now exist, but are uncontrolled. The police reserve is but a fraction of a force which must at all times be maintained, while the Native States reserve, far from increasing a present danger, will only tend to diminish it by withdrawing in war time from those States the very pith and flower of their trained force. This last, it is true from its lack of previous training, will not be immediately available for service, but it will certainly serve to maintain that uninterrupted stream of fighting men which will be necessary to fill the voids occasioned by a great war.

In conclusion, to those who doubt the wisdom or the policy of making our native army in India a thoroughly efficient and powerful engine of war, to those who fear to use it lest the weapon be turned against ourselves, we would reply that to blunt the weapon is to render it harmless to our foes, when our aim should be to make it bright and sharp and a terror to them. The true means of creating loyalty in an army is *not* to mistrust it, but to foster confidence and contentment, and to implant in it that spirit of honorable pride its past traditions and its present reputation, which is the surest safeguard of its discipline. The mysterious legend graven on the great brand excalibur filled Arthur's heart with doubt till Merlin's rendering of the weird words taught him to trust it. That rendering applies word for word to the native army of India :

"Take thou and strike the time to cast away.
Is yet far off."

APPENDIX I

Annual Cost of Reserve Centres.

	Rs.	As.	P.	
1 Commandant—Staff Pay at Rs. 300 ...	800	0	0	<p>The Staff Pay only of the Commandant has been calculated, as the officer so employed would otherwise be drawing either general duty pay or the full pension of 32 years service. Their pay of rank does not therefore cause any additional expense.</p>
1 Captain and Adjutant—Pay and Staff Pay ...	574	0	0	
1 Native Adjutant—(1st Class Jemadar) ...	67	8	0	
5 Havildars at Rs. 14 ...	70	0	0	
1 Naik at Rs. 12 ...	12	0	0	
Staff Pay of 4 Pay Havildars ...	20	0	0	
" " 1 Drill Havildar ...	5	0	0	
" " 1 Drill Naik ...	2	8	0	
20 Sepoys at Rs. 7 ...	140	0	0	
2 Buglers at Rs. 7 ...	14	0	0	
Good Conduct Pay ...	78	0	0	<p>G. C. Pay has been drawn at the rate of Rs. 3 per man and Rs. 2 per N. C. O., that is on the presumption that all are old soldiers.</p> <p>Calculated at an average rate of Rs 1 per man.</p> <p>That is extra Staff Pay allowed to the Civil or Regimental Surgeon in whose charge the Reserve Centre is placed.</p>
Compensation for dearness of provisions ...	28	0	0	
Contingent allowance to Adjutant for writers and for care of arms ...	100	0	0	
Staff Pay of Medical Officer in charge of Reserve Centre ...	100	0	0	
Total for one month Rs. ...	1,511	0	0	
Total for 12 months Rs. ...	18,132	0	0	
Add Staff allowances to Native Officers and men attached during training... ...	500	0	0	
Total for one year Rs. ...	18,632	0	0	
Total for 17 depôts for one year ...	3,16,744	0	0	

APPENDIX II.

Note on the Armies of Native States.

THE vexed question of the armies of Native States is one which demands immediate solution. I therefore make no apology for reiterating, but more fully, the views already expressed. Those views may be considered wild and impracticable. In self defence, therefore, I feel it necessary to enlarge on the arguments already employed, and, in doing so, I shall quote at length extracts from an article which appeared in the *Pioneer* two or three months ago on this very subject: "Considering the absolute security from external aggression which these States enjoy, and the danger to which the whole peninsula would be exposed in troublous times from the presence in its midst of elements so excitable and formidable, it is apparent that not only is the existence of such an armed host unnecessary, but that it is even incompatible with safety to ourselves. As stated by the Army Commission, 'one of the duties of the Imperial Army of India is the watching and overawing the armies of feudatory Native States.' So that not only are these armies a menace, but the Indian taxpayer has to pay for such forces as are required solely to overawe other forces which are a useless luxury, and consequently an unnecessary tax on the often miserable, poverty-stricken population which has to support them. In justice to the subjects of Native States, as well as in justice to the taxpayers of our own dominions, this anomalous condition of things should cease. Moreover fate or fortune, call it as we will, has placed these States in the position of feudatories, and as such they are bound, not merely not to impede, but actually to render aid to the sovereign power however and whenever required. It is ridiculous to assert that we have no right to demand such service; the history of the world tells us the obligations of feudal service due to the Suzerain."

"In the first place we should insist that no State should maintain more troops than are absolutely requisite for the dignity of the 'Raj' and the maintenance of internal order, without the permission and countenance of the Imperial authorities. The force to be kept up and the quota to be supplied in war being decided by ourselves. This measure would at all events place matters on a reasonable footing. The armies of Native States would have their *raison d'être*, and the Central Government could accurately gauge both the danger and benefit resulting from the existence of those armies. Admitting, then, the principle of feudal service, we have next to inquire how the aid thus given can best be utilised.

"The great objections to the employment of native contingents have always been (1) their relative inferiority in equipment and efficiency to the British troops with whom they would be associated; (2) their untrustworthiness when employed in distinct integral bodies with special duties assigned to them. As regards the first, it cannot be denied that in their present condition they are quite unfit to be brigaded with our own troops, or to be engaged with any such enemy as that for whom we have to prepare. On the other hand it cannot be denied that to arm, equip, and train them in peace up to the recognised standard of efficiency would be a dangerous experiment, the perils of which may be gathered from the experience left us by the Mutiny, when one contingent after another broke from its allegiance to swell the rebel host. Then, as regards the second, it is obvious that no General would wish or even dare to assign important duties such as guarding communications or watching a doubtful frontier to troops in whose loyalty he could not place implicit reliance, or in whose military conduct he had no confidence. It follows therefore that the commonly accepted idea of a brilliant array of feudatory contingents fighting under one banner is inadmissible. It is true that during the Afghan War native contingents were given and used which rendered no small service to the British Government; but it must be remembered that those contingents were furnished by the best affected States, were composed of soldiers drawn from the most martial of Eastern races, and were opposed to an enemy very much their inferior in organisation and equipment, as well as in courage. The native contingent, as understood to this day, is a military factor which it would be as dangerous and impolitic to employ

as it would be useless and foolish. Dangerous, because we could not trust it; impolitic, because jealousies and dissensions would at once be created by questions of command and employment; useless, because from its armament and training it is unfit to cope with regular troops of the present day; and foolish on every account."

I do not for one moment contend that contingents ought never to be employed. On the contrary there are occasions when they would be invaluable. For example, Kashmir might with advantage furnish a contingent to aid a brigade of our troops in observing the Gilgit frontier. Manipur might assist in holding Assam and Cachar, thus releasing one or more of our own regiments for active service elsewhere. In fact, Manipur is already, we believe, bound by treaty to do so. His Highness the Nizam might with his 'reformed troops' relieve regiments of the Hyderabad contingent now quartered in outlying stations of his dominions. The Sikh States might help in guarding the Trans-Indus frontier. While the troops of Scindia and Holkar might be usefully employed in the Southern Presidency or even in Burmah or at Aden, if the 'black water' objection could be overcome. These, however, are matters of detail. The great principle for which I contend is the justice and policy of making use of the armies of native States.

E. G. B.

1. The first part of the paper discusses the importance of the study of the history of the United States. It is argued that the study of the history of the United States is essential for a full understanding of the country and its people. The paper then discusses the various methods used by historians to study the history of the United States, including the use of primary and secondary sources, and the use of statistical methods. The paper concludes by discussing the importance of the study of the history of the United States for the future of the country.

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CAMPAIGN IN W. INDIA
1784.

MEDALS AND HONORARY DISTINCTIONS,
Granted under the Orders of the Government of India.

A PAPER BY COLONEL F. B. NORMAN, C.B., 24TH P. N. I.

Expedition to the West Coast under Brigadier-General

Thomas Goddard, 1778-1784,

WITH AN ILLUSTRATION OF THE MEDAL GIVEN FOR THE CAMPAIGN.

(Continued from page 273, Old Series.)

IN order to replace casualties in Goddard's force, a detachment of drafts for the regiments composing it was assembled at Cawnpore under Captain Popham. The drafts, numbering 2,400 men, were formed into four battalions, and to these were added two squadrons of cavalry, and a small detail of European artillerymen with four field pieces and a howitzer. It had been intended that this detachment should march after and join Goddard, but when news of the convention of Wurgaum reached Calcutta, it was considered imprudent that so small a force should attempt to march across India; it was, therefore, ordered to halt. Amongst other alliances which Hastings had formed was one with the Rana of Gohud. With this chief a treaty had been entered into by which the contracting powers agreed mutually to aid one another to oppose the Mahrattas. During the cold season of 1779-80 the Mahrattas, having invaded the territory of the Rana of Gohud, Hastings, in February 1780, ordered Popham to march with his detachment to the aid of the Rana.

Crossing the Jumna in February 1780, Popham speedily drove out of the territories of the Rana such of the Mahratta troops as were in the field, and, closely following them up, at last pitched his camp within three miles of theirs, which he determined to attack that night. The 4th battalion, commanded by Captain William Bruce, led the attack; it was completely successful; the enemy lost some hundreds of their horses together with most of their equipment, and were so thoroughly discomfited that they made no effort to impede any of the subsequent operations of the force.

Popham now undertook the siege of Lahar, but his guns were too light to make a practicable breach; he therefore had recourse to mining; one of his mines was countermined, but another was exploded on the 21st April, making a barely practicable breach. Popham, however, decided to storm at once. The 2nd battalion, commanded by Captain William McClary,

an old officer of high reputation, together with the Grenadiers of the 1st battalion, formed the storming party. The forlorn hope was led by Lieutenant Logan and Cornet Gardener. Both these officers were killed before they reached the top of the breach. Mr. Odell, a volunteer, then took command of the forlorn hope, which pressed gallantly on, closely followed by the rest of the stormers. The garrison, numbering about 500, made a desperate resistance, and it was not until their numbers had been reduced to a mere handful that they thought of asking for quarter. The loss of the English was 125 killed and wounded.

Recrossing the river Sind, Popham encamped for the rains within ten miles of the fortress of Gwalior, which was situated within the territories of Gohud but had been captured by the Mahrattas during the rule of the father of the reigning Rana. The fortress is thus described in an account of Gwalior published in 1784* :—"The fortress of Gwalior stands on a vast rock of about four miles in length, but narrow, and of unequal breadth, and nearly flat at the top. The sides are so steep as to appear almost perpendicular in every part ; for where it was not naturally so, it had been scarp'd away ; and the height from the plain below is from 200 to 300 feet. The rampart conforms to the edge of the precipice all round ; and the only entrance to it is by steps running up the side of the rock defended on the side next the country by a wall and bastions, and further guarded by seven stone gateways at certain distances from each other. The area within is full of noble buildings, reservoirs of water, wells and cultivated land, so that it really is a little district in itself. At the north-west foot of the rock is the town pretty large and well built ; the houses are all of stone."

The means at Popham's disposal forbade all hope of obtaining possession of the fortress by any other method than surprise. Not only did the difficulty of the enterprise act as an incentive to Popham for undertaking the same, but in the treaty entered into with the Rana, on the 2nd December 1779, it had been stipulated that, whenever peace took place between the English and the Mahrattas, the Rana was to be included ; and his present possessions, with the fort of Gwalior, were to be guaranteed to him. Popham, therefore, looked upon it as a point of honour to secure possession of the fortress, and the more so, as it was regarded throughout India as impregnable.

A party of freebooters living in the district of Gwalior had been accustomed to commit robberies in and about the town ; and once in the dead of night had climbed up the rock and got into the fort. This intelligence they communicated to the Rana, who at one time contemplated availing himself of it ; but ultimately decided that the enterprise was too hazardous to be undertaken by his troops. Finding that Popham was determined to attempt the capture of the place the Rana informed him of the circumstance, and shortly after some of Popham's own spies were sent with a party of the robbers to examine the spot where the latter stated they had climbed the rock. The party accordingly went to the rock, and succeeded in the dead of night in getting into the

* *Memoir of a Map of Hindostan.* By James Rennell, pp. 166-57.

fort, and ascertained that after their rounds the guards generally went to sleep. Acting upon this information Popham decided to attempt an escalade at the spot pointed out by the robbers.

At the point selected the scarp was about sixteen feet high; from thence to the wall was a steep ascent of about forty yards, and the wall to be escaladed was about twenty-five feet in height. Popham did not underrate the difficulties of the task he had to perform, but the object he said "was glorious," and he took all the precautions in his power to frustrate the disastrous consequences which would be entailed by a repulse. He ordered ladders to be made both of wood and rope, and with such secrecy were all his arrangements made, that but few even of the officers of the force were aware of his intention.

On the evening of the 3rd August 1780, the orders for the attack were issued. The storming party was placed under the command of Captain William Bruce, and consisted of two selected companies of sepoy with four British officers at their head, *viz.*, Lieutenants Wilson, Scott, Allen, and Paterson. Lieutenant Cameron, the Field Engineer, accompanied the stormers who were closely followed by twenty European artillerymen. Two battalions were to follow in support.

The storming party and support marked from Raipore, distant eight miles from Gwalior, at 11 o'clock P.M., Popham marching at the head of the support. A battalion, two guns, and the cavalry, were directed to follow at 2 A.M. to cover the retreat of the storming party and support should they be discovered; or, in the event of success, to cut off the retreat of the garrison. The advanced parties marching by unfrequented paths reached the foot of the rock a little before day-break. Just as they reached the rock, Captain Bruce saw the lights which accompanied the rounds moving along the ramparts and heard the sentries cough, which was the mode of signifying "all's well" in Indian garrisons. The desired moment for action, namely, the interval between the rounds, was thus ascertained. In order to lessen the noise of their footsteps in ascending the rock, the storming party had been provided with shoes of woollen cloth stuffed with cotton. These shoes were now put on, and as soon as the lights had disappeared, the wooden ladders were placed against the rock, and one of the robbers ascending returned with the news that the guards had gone to sleep.

In the meanwhile the stormers had been ascending the scarp by means of the wooden ladders. On hearing the robber's report, Lieutenant Cameron, with the aid of a wooden ladder, fixed a rope ladder to the battlements. As soon as it had been securely fastened Captain Bruce, with twenty Grenadier sepoy, climbed up without being discovered, and sat down under the parapet. Before any reinforcements could reach them, three of the party, so far forgot the orders they had received, as to fire at some of the enemy who were lying asleep near them. This nearly ruined the whole enterprise. The garrison were alarmed and ran in great numbers towards the spot from whence the firing had proceeded, but ignorant of the number of their assailants, they permitted themselves to be stopped by the fire kept up by the small party of Grenadiers to whose aid Popham speedily came with reinforcements. The garrison now retired to the inner buildings

and discharged a few rockets; but, having done so, hastily retreated through the gateways. The principal officers having been deserted by their men assembled in a house, and hung out a white flag. Popham sent an officer to give them assurances of quarter and protection, and thus, in the space of two hours, this powerful fortress was in the hands of the English. The casualties in the attacking force were twenty wounded and none killed; of the enemy, Bapojee, the governor of the fort, was killed, and most of his principal officers were wounded. The arrangements made for cutting off the retreat of the garrison were not so successful as those which led to the capture of the fort itself.

Hastings writing to England said of this exploit: "This is a success which I hope will prove decisive; I look upon it as one of the best concerted and most gallant enterprises that has ever been performed in India, nearly, if not equal in its advantages to the battle of Plassey. In Europe it cannot miss of its effect. The name of Gwalior has long been famous in history. In this country its effect cannot be described. Other congratulations have been but coldly offered, but scarcely a man mentions this without enthusiasm." Hastings strongly recommended Captain Popham for some mark of the approbation of the Court of Directors, and he was promoted to the rank of Major from the 4th August 1780, the date of the capture of the fortress. After the signing of the treaty of Salbye in 1782, by which peace was concluded between the Peishwa, the English and their allies, the Rana of Gohud was abandoned by the English, on the ground that he had been guilty of treachery; and Sindia repossessed himself of Gwalior and Gohud. In 1803 Ambajee Inglia, Governor of Gohud, threw off his allegiance to Sindia, and on the 15th January 1804 signed a treaty with the English, by which he agreed to surrender the fort of Gwalior. A force under Brigadier-General Henry White was sent to take possession of the fort, and Ambajee gave orders for it to be made over. The commandant, however, refused to obey the order, upon which the Brigadier-General occupied the city, and having established himself there, wrote to Lord Lake asking for a battering train and reinforcements. These were promptly sent, and a breach having been made, the Mahratta commander offered to surrender on the payment to him of Rs. 50,000. This was refused, and he then begged that he might be paid the value of certain stores which were in the fort. This was agreed to, and the fort was surrendered on the 4th February 1804. Brigadier-General White was appointed to command the troops left in garrison, and retained the command until it was made over to Sindia in accordance with a treaty signed on the 22nd November 1805.

Goddard had in the meanwhile determined to lay siege to the fort of Bassein as soon as the season should admit of his again taking the field. Accordingly, early in October, the European troops were sent by sea to Salsette; and on the 16th of the same month, the general marched from Surat with the native troops who were to take part in the siege. Eight companies of sepoy, together with a detachment of the Gaekwar's troops, were left to garrison Ahmedabad; two battalions of Bengal native infantry were stationed at Sinor on the Nerbudda; two battalions of Bombay native infantry were left at Surat and Broach; and Lieutenant-

Colonel Hartley with five battalions of native infantry covered the siege to the southward against Nana Farnavese and Hari Punt. Goddard joined the Europeans at Salsette on the 18th November, and was here reinforced by a detachment of Bombay troops, including 100 European artillerymen under command of Captain J. S. Torriano.

On reconnoitring Bassein, it was found so strong and well garrisoned that Goddard determined to carry on his operations with regularity and precaution. By the morning of the 28th he had completed a battery of six guns, and six mortars, within 900 yards of the fort, and, under cover of its fire, carried on his approaches to a spot where he constructed a grand battery, mounting nine 24-pounders, distant 500 yards from the fort; another battery, armed with twenty mortars of various sizes, and at the same distance from the enemy's works, was also completed at the same time. On the 9th December fire was opened from the grand battery, and also from the mortars; and the next day, a breach having been made, the garrison offered to surrender. Some difficulty occurred in arranging the terms, and fire was re-opened, but on the 11th the place surrendered at discretion with a loss to the assailants of only thirteen men.

Lieutenant-Colonel Hartley ably carried out the duty entrusted to him, and had in October defeated the Mahrattas, inflicting a heavy loss. He had thus cleared the Concan and enabled supplies to be drawn from that province. Nana Farnavese, however, speedily advanced with a force estimated at 20,000 horse to recover the Concan, and relieve Bassein. For nearly a month Hartley was engaged in daily skirmishes with the Mahrattas; at last his ammunition having been nearly exhausted, and having 600 men on the sick list, and only 2,000 fit for duty, he took up a strong position at Doogaur, where he sustained the assault of the Mahratta army for two days. On the third, the 12th December, the Mahratta general, Ram Chunder Gunesh, was killed; their army then became dispirited and retreated in great disorder. Bassein had surrendered the previous day, and Goddard, having heard of the attack on Hartley's position, immediately started to join him with the whole of his cavalry and the Bengal and Madras Grenadiers. He reached Doogaur on the 13th, and expressed his admiration of the strength of the position Hartley had occupied, and highly praised the gallantry of the troops.

The whole army was shortly after united under Goddard, and it so happened that just at this time the orders of the Court of Directors before alluded to,* reached the camp. Lieutenant-Colonel Browne of the Madras Establishment, who had been promoted to Lieutenant-Colonel on the 16th September 1879, now became senior to Lieutenant-Colonel Hartley. The latter officer quitted the army, and returned to England, where he represented his case to the Court of Directors, who, although not insensible of his great merits, could not alter the rules of their service. They, however, recommended him strongly to the notice of the King, who was pleased to appoint him Lieutenant-Colonel of the 75th Regiment—one of four regiments which had been recently raised in England for service in India.

* See No. 58 of this Journal, p. 268.

After the formation of the confederacy between the Mahratta chiefs, the Nizam, and Hyder Ali, against the English, Hyder Ali promptly took the field. Suddenly bursting into the Carnatic in July 1780, he devastated the whole country with fire and sword up to within nine miles of Madras itself. Alarmed by the success of Hyder Ali, the Governor-General deemed it advisable to make peace with the Mahrattas, and a treaty on favourable terms was proposed to the Poona regency through the Rajah of Nagpore, who, although he had joined the confederacy, was looked upon as friendly to the English. But, on receiving intelligence of the destruction of Colonel Baillie's detachment on the 10th September 1780, the Raja, considering their position desperate, hesitated to act as mediator between them and the Mahratta chiefs.

The detachment, heretofore commanded by Popham, was now augmented to a strength of over 5,000 men, including a regiment of cavalry; and the command given to Lieutenant-Colonel Jacob Camac. Hastings, unwilling to hurt Popham's feelings by compelling him to serve under Camac, sent him to command at Mirzapore, to which place Captain Mayaffre of the Bengal Artillery also was sent together with the men under his command, and who had formed part of Popham's detachment. Here they were stationed on the outbreak of the insurrection at Benares on the 16th August 1781 consequent upon Warren Hastings having placed Raja Chet Singh in confinement.

The troops from Mirzapore, and a battalion of native infantry from Chunar, were ordered to advance and halt close to Ramnugur. These orders were promptly obeyed; but, on the following day, the 20th August, Mayaffre who was in command, contrary to the orders of Popham, who had directed him to avoid hostilities until his arrival, determined to attack the fort, and apparently without reconnoitring or adopting any precautions marched into the narrow streets close under the fort and was soon exposed to a heavy fire. Mayaffre was killed, Captain Doxat commanding the French Rangers together with 23 of his men fell, and the British troops had to retire with the loss of 107 killed and 72 wounded, leaving behind them two field pieces and a howitzer. This unfortunate affair compelled Warren Hastings to seek protection in the fort of Chunar.

Prompt measures were at once adopted to retrieve this disaster; troops were pushed towards Benares from all the neighbouring cantonments. The small number of troops at Popham's disposal compelled him, however, to act on the defensive until the reinforcement should arrive. Emboldened by the forced inactivity of the British troops, the number of the insurgents rapidly increased; a body of whom, numbering 4,000 infantry, 400 cavalry, and six guns encamped at Patita, distant about seven miles from Chunar. It was determined to attempt to surprise their camp. Captain T. Blair was the officer entrusted with this duty. He accordingly marched from Chunar on the night of the 3rd September with his own battalion, the two Grenadier companies of Popham's, and two guns. The latter were drawn by bullocks unequal to their task, and so seriously delayed the march of the column that it was daylight before it arrived in sight of the camp, and the enemy were found drawn up in order of battle. Blair at once attacked them, and after a spirited

action, in which he had forty-eight killed and 85 wounded, put them to flight, capturing four of their guns.

On the 10th September the troops from Cawnpore under Major Crabb joined Popham; and he at once determined to assume the offensive. The enemy had again collected at Patita, and were also in force at Latifpur, a fort fourteen miles from Chunar. It was decided to attack the enemy at both these places by a combined movement. In accordance with this plan Crabb marched from Chunar on the evening of the 15th September, moving across the hills so as to attack the enemy posted at Latifpur in reverse. Popham marched the following day against Patita. Both columns successfully carried out the tasks assigned to them. Crabb defeated the enemy near Latifpur on the 20th, and on the same day Popham carried the fort of Patita by storm.

Chet Singh now took refuge in the fort of Bijagurh, situated on a rocky hill rising some 700 feet above the plain, but on the approach of Popham he quitted the fort and sought shelter in Sindia's territory. Popham, considering the troops under his orders insufficient for the reduction of the place, contented himself with confining the enemy within its walls. Towards the end of October, having been reinforced, he commenced active operations, and on the 4th November opened fire from a battery of two 18-pounders, but one of the guns soon burst, and he had to send to Chunar for another. Whilst waiting for its arrival he had mines prepared. Without, however, waiting for their explosion, the fort surrendered on the 10th. The treasure found in the fort, amounting to 25 lakhs, was at once distributed amongst the captors—a proceeding highly disapproved of by the Governor-General, but defended by Popham as being in accordance with demi-official instructions received from Hastings himself. The demi-official letter from the Governor-General was as follows:—"With regard to the booty, that is rather your consideration than mine, I should be sorry that any of our officers and soldiers lost any part of the reward to which they are so well entitled." Several attempts were made to recover the money for Government, but they were unsuccessful. Popham's own share of the prize was Rs. 2,94,000; the remainder was distributed in the following proportions; Majors, Rs. 44,956; Captains, Rs. 22,478; Subalterns, Rs. 11,239; Sergeants, Rs. 200; Subadars, Rs. 300; Jemadars, Rs. 140; Havildars, Rs. 100; Naicks, Rs. 80; Sepoys, Rs. 50.

Goddard followed up the capture of Bassein by the reduction of the fort of Arnál on the 18th January 1781. It was now decided,—contrary it was said to the judgment of Goddard—that the army should advance beyond the ghâts and be placed in a position to menace the Mahratta capital, and it was hoped that this would induce the enemy to enter into negotiations for peace. Goddard accordingly marched towards Poona with a force of 6,152 men, of whom 640 were Europeans. On the night of 8th February 1781, Lieutenant-Colonel John Neville Parker of the Bengal Army, with the advanced guard consisting of detachments of the Madras and Bombay European battalions and some Bengal sepoys, gallantly carried the Bhore Ghât, the defences of which had been much strengthened since it had been forced by the Bombay Army in 1778.

The General established himself at Khandalla a little beyond the summit of the pass. Here, owing to his force being constantly weakened by the frequent absence of large detachments required to escort convoys from Panwell, he found it necessary to throw up field works. These were repeatedly attacked by Nana Farnavese, whilst Parsram Bhao, acting in Goddard's rear, harassed the convoys. The Mahratta cavalry was estimated at close upon 80,000, whilst that of the British, consisting of the Bengal cavalry regiment and Kandahar horse, numbered only 700. All the attacks upon the British position were repulsed; but the Mahrattas, having cut off two large convoys, the General was reduced to the necessity of repassing the ghâts before the monsoon should have rendered the roads impassable. On the 15th April he commenced his preparations for a retreat, and by the 19th had sent all his guns and baggage down the ghât. He then followed with the remainder of his troops, incessantly harassed by the enemy, who skillfully availed themselves of their more intimate acquaintance with the country, and it was not until the evening of the 23rd that he reached Panwell, having sustained a loss of 466 killed and wounded. Amongst the former was Lieutenant-Colonel Parker who was in command of the rear guard. From Panwell the army marched to Kalian, where it was placed in cantonments for the rains.

The retreat of Goddard was looked upon by the Mahrattas as the most signal victory they had ever gained. Fortunately, Sindia was at this time engaged in defending his own dominions. It will be remembered that a force had been placed under the command of Lieutenant-Colonel Jacob Camac, who had been directed to march from Gwalior,—where the force had been assembled, to Oojein, in hopes that this would draw Sindia with his troops from the neighbourhood of Poona. Camac accordingly marched from Gwalior, took the fort of Sipri with but little loss, and continuing his march reached Sironj on the 16th February 1781. On hearing of the invasion of his territories, Sindia marched as rapidly as he could to their defence, and arrived at Sironj, whilst Camac was encamped there. Camac permitted himself to be surrounded and prevented from obtaining supplies. At last, forced by want of provisions, and after having been cannonaded for seven days, he determined to retreat. Captain William Bruce advised an advance to Bhopal, the chief of that place having afforded aid to Goddard. Other officers, however, counselled a retreat. "A measure in my opinion," wrote Hastings, "equally impolitic, ignominious, and desperate, for every peril becomes magnified by a confession of inferiority."

The retreat was commenced on the night of the 7th March, the troops moving off unobserved by the enemy; but Sindia quickly followed, and for two days sorely pressed the retreating force. On the 9th Camac reached Mahalpur, and forced the inhabitants to supply his troops with provisions. Resuming his march, he was closely followed by Sindia, who encamped every night five or six miles from the British camp, having his heavy baggage at an equal distance in his rear. His horse daily harassed Camac's line of march, cutting off his baggage and killing the followers. In this time of trial Major McClary and Captain William Bruce maintained the credit of the British arms and earnestly

begged Camac to become the assailant. At last, on arrival at Kolarus on the 24th March, Camac determined to carry out the proposal of Captain Bruce to make a night attack on Sindia's camp. The attack was successful and decisive. Many of the enemy were killed. Eight guns and three howitzers, one of which had been taken from the British at Wurgaum, Sindia's principal standard, besides some elephants and camels, many horses and a large quantity of grain fell into the hands of the victors.

Camac, whilst at Sironj, and also after he had left that place, had written to Colonel Morgan commanding at Futtehghur begging for reinforcements, and had pointed out Colonel Muir, who was his senior in the service, as the officer he wished to command them. He also wrote to Colonel Muir urging him to start in anticipation of orders. Colonel Morgan, considering the case as one of extraordinary necessity, ordered Muir to march to Camac's assistance, with three regiments of native infantry, the Grenadiers of a fourth, a regiment of cavalry and a company of artillery. Hastings, on hearing from Colonel Morgan what he had done, wrote to Muir desiring him to assume command of the force as soon as he had joined, and to send back all the infantry and guns he could spare, and one regiment of cavalry.

The success gained on the 24th March resulted in Sindia becoming desirous for peace, and on the arrival of Colonel Muir negotiations were entered into. The force remained in Sindia's territories until the 13th March, when a treaty of neutrality having been entered into by Sindia, the troops returned to the Company's territory.

The arrival of a French armament on the coast increased the Governor-General's desire for peace with the Court of Poona. Favourable terms were offered, but it was not until the 17th March 1782 that a treaty, known as that of Salbye, was signed by Mr. Anderson on behalf of the Company and by Sindia for the Peishwa and Mahratta chiefs. Nana Farnavese, however, in hopes of obtaining better terms, hesitated to ratify the treaty, and it was not until the 20th December, when he had heard of the death of the Hyder Ali, that he affixed the seal of the Peishwa to the treaty.

Goddard now embarked for England for the recovery of his health, but died just as the ship reached the land's end, leaving a name which was long held in high esteem by the British officers and the native soldiers of the East India Company.

The Bengal troops returned to their own Presidency under command of Colonel Charles Morgan by nearly the same route as they had marched under Goddard. Starting from Surat on the 3rd November 1783, they arrived at Etawah on the 10th March 1784. Here the force was broken up, having been reduced by casualties to one-half of its original strength.

It would appear that the Governor-General had consulted the Provisional Commander-in-Chief, Brigadier-General Stibbert, as to the honours and rewards that should be bestowed on the detachment on its return to its own presidency. Among other recommendations the Brigadier-General proposed that the Governor-General should express

in a General Order,* the high sense entertained by the Government of India of the services performed by the detachment ; that a pair of honorary standards should be given to each of the sepoy battalions ; that each subadar should receive a gold medal and each jemadar a silver one ; and that similar badges, but of inferior value, should be given to the non-warrant officers† and sepoys.

These recommendations were approved of by the Governor-General and Council in January 1784, but it was not until the return of the Bengal troops, which had been sent to Madras under Colonel Thomas Deane Pearse, that any public recognition was made of the services of Goddard's force. On the 22nd January 1785 a General Order was issued detailing the rewards that would be bestowed on both detachments, and on the 25th of the following month a Minute by the Governor-General relative to the Bombay detachment was published to the army.

In this Minute the Governor-General expressed his regret that the distance from Calcutta of the station at which the force was broken up, precluded him from making his acknowledgment in person for their exemplary services ; but, he continued, "the Governor-General being now on the eve of departing for Europe,‡ requests the Commander-in-Chief to publish to the officers, his countrymen and to the native officers and sepoys of the different corps which composed that detachment, his thanks for the distinguished honor which their gallant and persevering spirit and splendid successes have reflected on the Government over which he presided, and on himself in particular for the share which he had in their original appointment ; for having under that appointment restored the lustre of the British arms ; for having successfully attempted and achieved a long and perilous march through hostile and unknown regions, from the banks of the Ganges to the western coast of India ; and proved by their example that there are no difficulties which the true spirit of military enterprise under British conduct is not capable of surmounting."

By the General Order of the 22nd January 1785 additional pay at the rate of one rupee per month was given to each non-warrant officer and sepoy of the native corps composing the detachment, who were

* The Governor-General, as a mark of his approbation of the services of Captain Welsh throughout the campaign, sent that officer a sword with the following letter dated 10th June 1784:—

"As it is much my wish that you may receive and keep some lasting testimony of the esteem which I entertain for your merit, I request your acceptance of the accompanying sword. It is not in itself of any value ; but I may flatter myself that there are many to whom such a pledge of the estimation in which I hold your character will at least prove of no disservice to it ; especially if it is understood that you are known to me by no personal recommendation, nor by the habits of society, but only by public service.

(Signed) "WARREN HASTINGS."

"Captain Welsh."

† By a General Order, dated March 1786 it was directed that the native officers of the sepoy corps should thenceforward be denominated commissioned and non-commissioned officers, instead of warrant and non-warrant ; and to the former commissions were accordingly issued under the signature of the Commander-in-Chief, in lieu of the warrants which had formerly been granted by the Colonels Commanding Brigades.

‡ Warren Hastings sailed from India in the first week of February 1785. He was succeeded by the senior member of Council, Mr., afterwards Sir John Macpherson, who continued to act as Governor-General until the arrival of Lord Cornwallis in September 1786.

originally attached to the same on the march to its destination and returned with it, the additional pay to commence from the 1st January 1785. A pair of honorary standards was sanctioned for each battalion. A gold medal was directed to be given to each subadar, and a silver one to each jemadar,* with such a device, motto, and inscription as should be judged applicable to the occasion; also medals of the same sort to the officers of the Golundauze company, and similar badges of inferior value to such of the non-warrant officers and privates as had served with the detachment from the commencement of the expedition until it was broken up.

On the 26th January 1785 the Commander-in-Chief forwarded to Government for inspection, two medals struck for the warrant officers and sepoys from dies made by Mr. Shepherd of the firm of Shepherd and Young of Calcutta, and at the same time transmitted a letter from that firm stating that they would be unable to strike the medals for less than one rupee each, independent of the gold and the silver used, and adding that the price of the dies would be Rs. 600. The medals were approved of, and the proposed charges sanctioned.

On the REVERSE of the medal is an inscription in Persian, of which the following is a translation: "The courage and exertions of those valiant men by whom the name of Englishmen has been celebrated and exalted from Hindoostan to the Deccan, having been established throughout the world. This has been granted by the Government of Calcutta in commemoration of the excellent services of the brave."

Year of Hegira ...	...	...	...	1199
Year of Christ ...	...	...	...	1784

On the OVERSE is a representation of Britannia seated on military trophies extending her right hand holding a wreath of laurel towards a fort on which the British colours are flying.

It has been assumed by Captain Buckle† that the fort was intended to represent Ahmedabad, captured by Goddard on the 15th February 1780, but as the medals given to the Bombay and Carnatic detachments were exactly similar, it is more probable that the design was merely symbolical, and not intended to represent any particular fortress.

The existing regiments permitted to bear the word GUZERAT on their colours in commemoration of the campaigns under Goddard, are the Royal Munster Fusiliers, formerly the 1st and 2nd Bengal European Regiments; and the Royal Dublin Fusiliers, formerly the 1st Madras and the 1st Bombay European Regiments. Why the distinction was so confined upon the first named regiment it is impossible to explain, as no European Infantry from Bengal were ever attached to Goddard's force.

[The works chiefly consulted in the compilation of this article were Grant Duff's History of the Mahrattas; Auber's Rise and Progress of the British Power in India; Gleig's Life of Warren Hastings; Memoirs of Sir Philip Francis; William's History of the Bengal Native Infantry; Buckle's Memoirs of the Bengal Artillery; Stubb's History of Bengal Artillery; East India Military Calendar; and Rennell's Memoir of a Map of Hindoostan.]

* Subsequent orders were issued directing that silver gilt medals should be given to the jemadars.

† Memoirs of the Bengal Artillery, p. 97.

ARMY ORGANIZATION AMONG ORIENTAL NATIONS.

BY COLONEL F. H. TYRRELL, 14TH MADRAS INFANTRY.

TAKING the nations whom we usually class as "Orientals" all together, from the Moors in Morocco to the Tartars in China, their absolute inability in modern times to institute and maintain an effective organization of their military forces must have struck every observer. Not only is the native intellect and energy unequal to the task, but the systems devised for them by European skill and established under the superintendence of foreign experts, cease to work directly the guiding hand of the inventor is withdrawn. The elaborate systems of organization, for instance, from time to time established in the Turkish and Egyptian armies by French and German officers, have been almost absolutely void of results from the indolence and venality of the officials entrusted with the working of them, and the general indifference of the monarch and the whole nation to such matters.

No one cares about such things now, and no one understands them: the old, simple, and to some degree effective military organization of such countries as Turkey and Persia has had to give way before the march of modern improvement and the introduction of more scientific methods of warfare, and Shah and Sultan have nothing to put in its place. The easiest method seems to them to engage a band of staff officers and drill instructors from some of the military nations of Europe with *carte blanche* to organize a standing army on the principles that have proved so successful there. The result is that an organization is devised theoretically perfect, which is never carried into effect except on paper. No one, from the Saraskier down to the subaltern, ever thinks of attempting to adhere to it.

Compulsory enlistment is reserved for the poor and helpless; the battalions are filled only to half their proper strength; the reserves are never called out nor trained at all; all the expenses of a complete army establishment are incurred, and all the burdens of it are borne without any corresponding benefit, while the whole system becomes a delusion and a snare, which blinds the eyes only of ill-informed foreign military critics. It would seem as if the dry-rot which visibly affects the political life of all the Moslem nations in modern times had extended its fatal influence particularly to the army. Yet Islam is nothing if it is not militant, and these very nations who are so profoundly apathetic to military improvement, look to the power of the sword to restore them

one day to their old position among the States. Peopled for the most part as they are by brave and hardy races, inured to the use of arms, the total absence of military talent among them is certainly remarkable. During the past two hundred years, the Musalman nations have produced only one man who can fairly be ranked as a General, the famous Nadir Shah. Hyder Ali of Mysore undoubtedly possessed talents of a high order, both for army organization and for the leading of troops, which might have made him a good General under more favourable conditions of education and situation. Ibrahim Pasha of Egypt attained to some reputation as a successful General, but his strategy was inspired and his tactics initiated by the able band of French renegades from the Grande Armée who were always at his elbow.

In spite of their military schools and foreign education, the modern Osmanli Turks have not during the course of three-quarters of a century been able to show us a Turkish General. The celebrated Omar Pasha was a Croat by birth and had served in the Austrian army. Muhammad Ali Pasha, who held the chief command for some time during the late Russo-Turkish war, was a Prussian. Ghazi Osman and Ghazi Ahmad Mukhtar Pashas, were gallant soldiers, but they never displayed the higher qualities of the General, and the strategy of the latter was certainly, on one occasion at least, faulty.

The cause of this general and lamentable incapacity seems to be involved in the causes of the general decay which, from some reason or other into which it would be foreign to our subject to enquire, seems to overtake all the institutions of Muhammadan countries in this age. Yet in the middle ages we find the warlike nations of Islam, such as the Tartars, Mamelukes and Osmanli Turks, quite a match in the arts of war for their European rivals : and some of them moreover possessed systems of army organization of native growth admirably adopted to the development and utilization of their natural resources. It is my purpose in this paper to briefly review the most celebrated of these systems at the time of their greatest perfection. I fear my review of them must necessarily be a very incomplete one, owing to the imperfect notices of the subject which are to be found in European authors, and also to my inability in my present situation in an up-country station to consult books of reference with which I might otherwise have refreshed my memory.

The decimal division of troops seem to have been the earliest method used in the East, as in the West. We read in the Old Testament of Captains of Tens and Captains of Fifties ; and Greek writers speaking of the Persian armies of the successors of Cyrus use the terms Chiliarch and Myriarch, corresponding to the modern Min-bāshi and Tomān-bāshi.

In the thirteenth and fourteenth centuries the Mughal Tartars were the greatest military power in the world. It was their great chief Chengiz Khan who organized the tribes of armed horsemen into an army. The whole Mughal nation was called the Urdu or Camp, a designation corrupted in English into the word Horde. It was divided into army corps of one hundred thousand horsemen, called a Togh (horse-tail, or rather we should yak-tail ensign) from the insignia of its commander who bore the title of Orlok (which might be rendered in

English by Marshal.) There were nine of these Orloks serving under Chengiz Khan, which would give nine lakhs as the aggregate of the Tartar hordes. It is probable that there was a tenth Togh forming Chengiz Khan's own personal command, which would raise the total to a million. Most likely the census was not very accurate, and this total number was probably an arbitrary one fixed to correspond with the decimal sub-division of the army. Each Togh contained ten divisions of ten thousand men each, called a *Tomán*, and commanded by a *Tomán-báshi*; the *Tomán* was sub-divided into ten corps of a thousand each, called a *Mini* (thousand in Turkish) under a *Min-báshi*: each *Mini* into ten companies of a hundred each (*Yuz*) commanded by a *Yuz-báshi*: each company into ten squads of ten men each under an *On-báshi* (leader of ten). Each commander appointed the ten officers in his own immediate command, and was responsible for them. By this system no command had to be given to more than ten men at a time. The nine Orloks transmitted the orders of their master the great *Ká-an* or *Khákán*, to their *Tomán-báshis*: each *Tomán-báshi* passed it on to his ten *Min-báshis*: each *Min-báshi* to his ten *Yuz-báshis*: each *Yuz-báshi* to his ten *On-báshis*: and each *On-báshi* communicated it to his squad of ten men. Thus the orders of the monarch were transmitted to the army by six stages, and each officer had only to pass the word to the ten subordinates immediately under him. It would be difficult to find a simpler system of organization, or one better suited to the genius of a rude and uncivilized nation of warriors. It appears to have answered its purpose admirably, and to have facilitated the maintenance of the strict discipline, which even more than their numbers and Parthian tactics contributed to the astonishing success of the Tartar arms under Chengiz and Tamerlane. For their victories were not won merely over the degenerate successors of the Khalifs and the effeminate inhabitants of India and Southern Asia: *Bátu Khán*, the grandson of Chengiz, conquered Russia, overran Poland, and defeated the steel-clad chivalry of Europe in the great battle on the Silesian plains, when the Mughals* filled nine sacks with the right ears of the slain Christians. And in 1402, at Angora, *Taimúr the Tartar*, with the same organization, inflicted a crushing defeat upon the army which was then justly regarded as being the best equipped and most perfectly organized military force of that age.

This was the Ottoman or Osmanli army which had an organization far more complex and more elaborate than the Mughals could ever boast of, and the like of which has indeed never been seen in any other Oriental country. The principle of universal compulsory military service, believed to be an indication of barbarism, or at least of imperfect civilization, until it was resuscitated by Prussia in our own days, was the basis of the Ottoman military system. The whole nation formed an army of which the Sultan was ex-officio the Commander-in-Chief. Every Turk was bound to serve in the wars: if he had land, he held it as a fief for serving as a horseman; if he had a horse but no land, he served as an *Akinji*, light

* I have adopted the modern Persian form of spelling the word which we usually write *Mogul*. In old Persian books it is spelt *Mughúl*, and *Mongol* is a common and probably a more correct variation of it.

horseman or forager : if he had neither land nor horse, and had not been lucky enough to get enlisted into the Sultan's regular troops, or the Pasha's body-guards, he served as a pioneer, or with the baggage train. Then there were the paid troops, including the Sultan's horse guards and foot guards : the Sipahis or cavalry ; the Topjis or artillery ; the Jabajis or ordnance corps men, and the Janissaries or infantry ; besides the Lavands or marines for service in the ships and galleys.

All the land in the Turkish empire was conquered territory (most of it acquired from Christian possessors) ; and all of it, except the Crown lands and the Vakf or religious foundation lands, was parcelled out into fiefs which were distributed, as fresh provinces were conquered and fresh territories acquired, among the soldiers of the victorious army. . A small fief which supported a single horseman was called a *Timár*, and its holder a *Timárlı* : a large fief was a *Ziámat*, and its holder a *Za'ims* : he furnished a certain number of horsemen according to the value of his estate : the number of horsemen maintained out of the revenues of a *Ziámat* ranged from five to twenty. Each province or *Wiláyat* was divided into districts called *Sanjáks* (standards) and presided over by a *Sanják Beg* : he had an office in which all the fiefs in his district were registered. The chief of the province was styled the *Beglerbeg* (chief of chiefs) and in his office a register of all the *Sanjáks* and the number of their fiefs and fighting men was kept.

When the army was to be mustered for a campaign, the Sultan issued orders for mobilization through the *Saraskier* (war minister) who called on all the *Beglerbegs* to furnish the quota of horsemen for their respective provinces, and fixed the day and place of rendezvous : the latter was usually Adrianople when the campaign was to be a European one : each *Beglerbeg* summoned his *Sanják Begs* and named a rendezvous for them, and each *Sanják Beg* summoned his *Za'ims* and *Timárlis*. When they were assembled under his standard he marched them to the provincial rendezvous : there the commands of all the *Sanják Begs* were reviewed by the *Beglerbeg* who led them to join the grand army either at the place fixed upon or at the most convenient spot on the line of march.

In the field all the horsemen of a *Sanják* formed a squadron under the command of their *Beg*, who appointed his own subalterns. These feudal cavalry men found everything for themselves out of the revenues of their fiefs, horses, arms, and forage, like our Indian *Silahdars*. The maintenance of one horseman was computed to come to a sum equivalent to sixty or seventy rupees per annum. These horsemen formed the main strength of the Turkish armies, and they far outnumbered all the other descriptions of troops.

Such Turks as owned a horse but had no land served in the *Akinji*, or *Foragers*. There were all collected into one body for a campaign under the command of an officer styled the *Akinji Báshi*. They acted as *Cossacks* for the army, preceding its march by several days when in an enemy's country. Their only remuneration for their services was the plunder they could obtain, and consequently "loot" was always their principal object, and they were of very little value as soldiers. They were called *Ecorcheurs* by the French and *Sackmen* by the Germans.

After the conquest of Egypt by the Turks, the Mameluke Beys of that country held their lands on condition of serving the Sultan in his wars, and the provinces of Barbary each furnished its contingent of Moorish horsemen called "Maghrabis" (westerlings) by the Turks.

The civil and military administration of the Turkish Empire were confounded together as is common in Oriental monarchies; and the Beglerbegs and many of the Sanjâk Begs were also civil governors. The former was always a Pasha of three tails (Togh): the latter had two, or only one tail. Every Pasha kept up a body of troops for the guard of his person and court and for the police and revenue duties of the Pashalik: and they were paid out of these revenues, and followed their Pasha to foreign wars. The body-guard was always composed of horsemen called Dalis (Madcaps) who wore a high cap of peculiar shape; they were commanded by a Dali-bâshi. The Pasha's infantry were called Sagbans (dog-keepers). The number of these troops depended entirely on the will of the Pasha or the revenues of his Pashalik. They were purely irregular, but as their number was very considerable, they were reckoned as a branch of the army.

The Regular or paid troops, called Kâpi-kuli, or Slaves of the Porte, formed the Guard of the Imperial Court, and the nucleus of the army in the field.

First there were the household troops of the Sultan: but these, like the *Maison du Roi* of the Bourbon Kings of France, were looked upon rather as part of the Court establishment than as belonging to the army.

They comprised the troop of horse-guards called Mutafarrika (different or various) and several bodies of foot: the Zulfchis (Ringletteers) who wore long false curls fastened inside their helmets and hanging down to their shoulders: the Solaks or bowmen of the guard who marched in file on each side of the Padishah when he rode out in State: they wore metal helmets with a crest of feathers shaped like a fan, which is believed to have been an imitation of the old Roman crested helmet. The fasces and axes of the Roman lictors were carried by the Paiks or footmen of the Sultan. The word Solak signifies left-handed, and the archers who marched on the right hand of the Sultan drew their bows with the left hand. All these corps were limited in number to some fifty or a hundred men, and they were never employed in the field. But the Sultan's Bostânjis (Park-rangers) who were recruited from the game-keepers and gardeners on the Imperial estates, formed a regiment three thousand strong, which performed the guard duties of the seraglio. Those especially who guarded the women's apartments, and who escorted the Imperial ladies when travelling were called the Khâsekis, and Baron de Tott calls them the grenadiers of the Bostânjis. This corps was commanded by an officer called the Bostânji-bashi and were uniformed in red caps and dresses. They went through their baptism of fire only as late as 1696, when Augustus the Strong, Elector of Saxony, made his unsuccessful attack on the camp of Sultan Mustafa the Second near Temesvar.

They are now the Ottoman Imperial Guard and are the only corps of the old Turkish army still in existence: (besides the Mutafarrika, who, I believe, are still retained under their old name).

The paid Turkish troops were the first example of a regular standing army in Europe. The Janissaries were paid, clothed, fed and lodged in barracks, and it is probable that their institution first gave European statesmen the conception of a regular army. They were first raised as early as 1328 A.D., and in the time of Sultan Suliman Kánúni Sâhib Kirán (Lord of the Age) called by the Christians Soleyman the Magnificent, the regular or standing army numbered fifty thousand men.

The cavalry were from ten to fifteen thousand strong. They were called by the Persian term Sipáhi, which among the Ottomans is used for a cavalry soldier only. All horse soldiers might be spoken of as Sipáhis, just as we use the term dragoon sometimes for a synonym of horse-soldier, but it particularly signified this paid cavalry which was divided into two corps, called respectively the Siláhdárs, or Sipáhis of the Yellow Standard, and the Sipáhi-Ghuláms or Sipáhis of the Red Standard. They are usually known by these latter names in Turkish history. They were originally one corps, the Sipáhi-Ghuláms being henchmen or squires to the Siláhdárs, but they were afterwards organised in a separate corps. Their head-quarters were at Constantinople, and most if not all of them appeared to have been stationed there after the Sultans made that city their permanent residence.

I think I remember seeing mention made in a Turkish author of the barracks of the Sipáhis at Stambúl. The men were all Turks, and were enlisted for long service, probably like the Janissaries, for life. They were organised on the Siláhdár system, finding everything for themselves. The pay of a Private Sipáhi was about four-pence per diem in English money: of course in the middle ages and in a country like Turkey the value of money was far higher than it is now.

The whole corps was commanded by a Colonel-in-Chief called the Sipáhilar Aghási, who was appointed directly by the Sultan. The appointments of the other officers were probably made by this Agha from the ranks. The only record of their organisation that I have been able to find is, that they were divided into squadrons called Buluk, and the whole body of Sipáhi officers were called the "Buluk Aghálari" or "squadron officers."

The Sipáhis appear to have worn a distinguishing dress, a scarlet kaftan and a high cylindrical yellow turban. Bishop Newton in his work on the Prophecies speaks of the "martial apparel of red and yellow" worn by the Turkish Sipáhis as a fulfilment of verse 17, Chapter IX of the Revelations.

There was also a corps of horsemen called Gunalis (pronounced Gyunalis): all that I can find out about them is that they wore a dress like the Hungarians' kalpaks, stiff upright plumes and pelisses, and appear to have been a kind of Turkish Hussars.

The Topjis or Topchis were the gunners and also the cannon founders. They included the Khumpárajis or bombardiers, (from the Persian Khum-pára, a mortar or howitzer, lit. a piece of a jar). The Turks were actually the first nation in Europe who had a regular artillery corps. Long after the institution of the Topchis, the cannon of European nations was served by civilians, and the artillery service was looked on as beneath the dignity of the profession of arms.

The field guns used by the Turks were mostly eight and twelve-pounders. They were drawn by teams of bullocks. The wheels of the guns of a battery were linked together in action by an iron chain to keep out hostile cavalry.

The Topchis were mostly at first recruited from the forced levy of Christian boys, and the method of enlisting them will be described when we come to the Janissaries: they were picked for their size and strength. The head-quarters of the corps was at Constantinople, and they were commanded by a Colonel-in-Chief called the Topchi-bashi, who was Master-General of the ordnance.

The Jabajis were a corps which had charge of the arsenals and magazines, and the provision and storage of all arms and munitions of war. They were recruited similarly to the Topjis and Janissaries, and were commanded by a chief called the Jabaji-bashi.

The infantry of the standing army were called "Yangi-chari" (German Janichar, from whence the English Janissary) or "new soldiery." The Turks were a nation of horsemen and had a great objection to the infantry service: but their conquering Sultans soon discovered the absolute necessity for good infantry, and a thousand Christian boys were forcibly converted to Islam, trained to arms and formed into the "new militia." The experiment proved so successful that their number had risen to ten thousand at the siege of Constantinople, and to twenty thousand in the time of Sultan Sulimán the Magnificent. They afterwards reached forty thousand, and the common nickname by which the corps was known in the seventeenth and eighteenth centuries was the "Kirk Bin Kul" or forty thousand slaves. At the time of their dissolution in 1827 their numbers are computed to have reached a lakh and a half, but two-thirds of these were "Yamak" or reserve Janissaries who had their names inscribed on the muster-rolls from social and political motives, and never bore arms in the ranks.

The Janissaries were at first recruited from captive boys taken in war: but after the settlement of the Ottoman Government in Constantinople, the following method of conscription was employed to fill their ranks. The empire was divided into recruiting districts, and into these a Janissary press-gang was sent once in every seven years. The officer commanding it was empowered to impress any boy, the son of Christian parents. The boys taken were generally between the ages of twelve and sixteen. They were taken to Constantinople where they were placed under charge of a Janissary colonel, lodged in barracks, rationed, clothed in red caps and jackets, and trained in gymnastics and the use of arms. They were called Ajam-Oghlan (foreign boys). When they were full grown they were transferred to the ranks. The Topjis had the first pick of the levy; then the Jabajis; sometimes a draft was made into the Sultan's Bustanjis. After the vacancies in these corps were filled, the rest of them became Janissaries. If any turned out weak and unfit for the service, in spite of the care taken in their first selection, they were made pages in the seraglio.

They were circumcised and instructed in the Musalman ritual on their first conscription, and they appear to have become perfectly reconciled to their new faith: we never hear of a desertion from the Janissary

ranks. But the difference of race and blood from the Osmanlis made these troops into a separate caste, and had, no doubt, a great deal to do with the rise of the seditious spirit which in later times made the Janissaries tyrannise over the Sultan and the State, until they very nearly proved the ruin of the empire, of which they were once the staunchest defenders.

The corps (Jama'at of the Janissaries) was divided into regiments, "Orta;" the strength of these averaged about five hundred men apiece, but there does not appear to have been any fixed limit to their strength.

As the name and fame of the Janissaries increased, the native Turks conquered their dislike to the infantry service, and sought enlistment in their ranks, and by degrees they entered in such numbers that the conscription of Christian boys was discontinued. The last levy of this kind took place in the latter part of the seventeenth century. Still recruits crowded to the soup kettles in such numbers that the expedient of enlisting men as reserve Janissaries was adopted (Yangi-chari Yamáki). These men had their names enrolled in the musters, but were never to be called out except on emergency, and were quite untrained. The Colonels took advantage of this system to enrol any number of men they chose, so that in later times the number of men on the rolls of a favourite regiment, one of those stationed in the great cities of the empire, might amount to many thousands, while other less favoured Ortas only could shew a few hundreds. The regiments had at first no fixed stations, but after the capture of Constantinople, they became territorial, and had their head-quarters fixed in some garrison town. When fresh territory was conquered, fresh regiments of Janissaries were raised to garrison it.

At the beginning of the eighteenth century the number of the Ortas had risen to one hundred and eleven. Prince Cantemir says that the eleventh regiment took precedence of all the others, the first regiment ranked next, then the hundred and eleventh and then the second, third and all the others in regular numerical order. He gives no explanation of this peculiarity.

The Sultan on his accession always enrolled his name as a private Janissary in the first regiment, the badge of which was the crescent. Each regiment had its own badge, which was tattooed on a recruit's arms on his enrolment in the regiment. The badge was generally the figure of some animal. The sixty-eighth Orta, stationed at Widdin, had a crane (Turna) for its badge, and the men were called Turnajis, "crane-men." One regiment had a mastiff (Samsun) and another a pointer (Zaghar), and the men of these corps were called "Samsunjis" and "Zagharjis," and dogs of those breeds were always led along with the regiments. Another regiment which had been originally raised for service on board ship had an anchor for its badge.

There was an immense *esprit de corps* among all the Turkish troops, and the Janissaries especially were jealous of the honor of their corps and regiments. A real or fancied insult to a member of one corps would rouse all his fellow-soldiers to avenge it. There was a standing quarrel between the Sipáhis and Janissaries which frequently led to pitched battles in the streets of Constantinople, and Baron de Tott narrates how

a regular war was waged between a Janissary regiment and the Lavands or Marines, which had commenced in some tavern brawl and which put a total stop to traffic and business for some days in the maritime quarters of Istantbul.

I do not know what was the sub-division of the Orta or regiment, but they appear to have been divided into companies, for Baron de Tott says there were two soup-kettles to each company of Janissaries.

The free rations issued to the Janissaries were made into soup, like those of the French soldiers, and the soup-kettles went everywhere with the men, and were looked on as their colours, the loss of which in battle was an irreparable disgrace. When the men intended to mutiny, they first overturned their soup-kettles in the Barrack Square, or in the At-maidán, (hippodrome) at Constantinople, to show that they would no longer eat the Sultan's soups. There was a Janissary guard furnished every day to the Porte, and the men of this guard got their soup from the Sultan's kitchen. When word was brought to the Diván (Council of Ministers) that the Janissaries on guard refused to eat their soup, everybody trembled, and all other business was postponed to the task of learning and remedying the grievances of the soldiery.

The Turkish historian, Evliya Effendi, says that one of the sights of Istantbul was the race of the Janissary cooks for the carcasses of the sheep killed every morning for their rations; the master cooks in their gold caps (Zar-kulah), greasy black leather gowns, with their silver chains and huge knives and cleavers in their girdles, marshalled the running cooks at the Talimkhána on the parade ground, and they raced across it for the carcasses at the other end, getting the choice in the order of their arrival. The Janissary head-quarters at Constantinople were always spoken of as the Uják (kitchen range) and the whole body of Janissary officers were called the Uják Aghalari, or lords of the kitchen range, rendered in Persian books as "Sáhibán-i-Uják." This affectation of culinary terms ran through their whole organization. The colonels of regiments were "Chorbaji" (soup-men), the other officers were "Ashji" (cook) and "Karákulukji" (scullion). Baron de Tott says the Ashji was a major, and the Karákulukji an adjutant. In this case there would have been only one to each regiment, but I think they must have been company officers. Evliya Effendi speaks of master-cooks and ordinary cooks. It would appear that the duties of an officer and a cook were actually combined in the same person: certainly an extraordinary state of things. The head cook of the whole corps was on the staff of the Aghá. On parade he appeared in great pomp and dignity; his black leather gown studded with knobs of silver, his girdle filled with gigantic knives and cutlasses, the handles of which projected so high as to conceal his face from view, while he was so loaded with silver pots and pans suspended by chains of the same metal that he had to be supported by a Janissary on each side to enable him to stagger along under his load.

The whole corps was commanded by a Colonel General called the Aghá of the Janissaries: and he was looked on as such an important person that he had a seat in the Diván. He was appointed direct by the Sultan and need not have been a Janissary. Originally the post

had been held by an officer promoted from among the Janissaries called the "Sagbân-bâshi" (head-dog keeper), but one of these having headed a mutiny of the corps in the reign of Salim the Ferocious, the irate monarch abolished both him and his officer, and appointed one of his own courtiers Aghâ of the Janissaries. All the other officers were raised from the ranks. The want of a proper corps of officers was the great blot in the Turkish military system. They had no class of men imbued with the feelings of pride and honour which distinguished the nobility and gentry of Europe from the common people. And this is still the chief want of the Turkish army in our own times.

All the Janissary officers served on foot, the Aghâ being the only one who was mounted. In later times the colonels usurped the title of Aghâ, or were called so by courtesy.

Baron de Tott says that every Janissary received annually a white felt cap, a pair of red shoes, and enough blue cloth to make a pair of breeches (Shalwar), and these articles, he says, they wore on duty and parade, but their coats were of any colour, though all of one uniform cut. In the Plates of Turkish military costumes published in London in 1818, the Janissary colonel is represented as wearing a high white cap of a peculiar shape with a copper plume case in front, and a jelly bag hanging down behind. This was said to be worn in commemoration of the sleeve of the Saint Hâji Bektâsh, who had stretched out his arm over their heads to bless the new soldiery at their first inauguration. A similar strip of cloth appears in other Turkish military head-dresses, and it may have been the origin of the Hungarian busby-bag, for the Hungarians copied many things from their Turkish masters.

The different ranks of the Janissaries were distinguished by the shape of their caps. In the abovementioned work the subaltern officer of Janissaries is represented wearing a high white cap like those worn by the Grenadiers of European armies in the eighteenth century, and it seems probable that the latter was copied from the former. Evelyn in his Diary, speaking of the introduction of the new kind of soldiers called Grenadiers into the British army, says that they wear "caps with coped crowns like Janissaries."

There are six or seven pictures of Janissaries in the book above referred to, but the white cap is the only symptom of uniform to be discovered in their dress or equipment. The idea of uniformity appears to have been at one time grasped by the Turks, but soon let go again.

Janissaries who were superannuated were transferred to the "Oturak" or "Sedentaries." These seem to have been a kind of veterans, available for garrison duty only. I do not know whether they formed a separate corps or remained attached to their own regiments; probably the latter. When Sultan Murâd the Terrible invaded the Northern Provinces of Persia in 1634, veteran Janissaries, who had served under Sultan Solymán the Magnificent at the siege of Sigeth in Hungary sixty-eight years before, were carried in litters at the head of the regiments to inspire the troops by their reminiscences of past triumphs.

All the Musalmán inhabitants of the islands of the Archipelago and the maritime towns were liable to service under the orders of the

Kapitan Pasha, who combined the functions of Lord High Admiral and Minister of Marine : they furnished a regular corps called the Lavands or Marines, who served only on boardship, and had their head-quarters in barracks at Constantinople. They are called "Levantines" in the old English translations of Don Quixote, and their name may perhaps have been derived from the Italian "Levante." They wore short jackets and knicker-bockers, instead of the long-skirted habits of the rest of the soldiery. This corps was in existence up to the beginning of the present century.

One of the most objectionable features of the Ottoman military system was the *Julús Bakhshish*, or "Accession donation," which was paid to the regular troops on the succession of every new Sultan to the throne of his fathers. Its original object was to gain the support of the troops against rival brothers and cousins : and soon it became a custom and was claimed by the troops as a right : and as the amount of the largesse was supposed to be limited only by the generosity of the Sultan, it soon came to pass that the cupidity of the troops was only to be satisfied with the distribution of the whole sum that happened to be in the treasury at the time. This led to irregularity in the issue of the regular pay : and indeed the primary cause of the decay of the Turkish standing army was the misappropriation of the revenues which ought to have been expended on its maintenance, which were squandered by extravagant Sultans, or embezzled by peculating Pashas, precisely as the loans obtained from the confiding capitalists of Europe are at this day.

Into the history of the decay and dissolution of the old Ottoman army system I do not intend to enter : its causes were many and various, and are involved in the general decay of the Osmanli nation, both in numbers and in energy : and an accurate account of the gradual dissolution of the army organization which I have attempted to describe might be easily made to fill a volume. Under it, the Turkish national army grew from the strength of a few divisions to be a mighty host overawing Eastern Europe and Western Asia, within the course of a few years. It grew and flourished for three hundred years, nor was the decay which had set in fully apparent till one hundred years later, when it became plainly manifest in the long and general war which ended in the expulsion of the Turks from Hungary and Poland.

The Tartars of the Crimea, after the conquest of the sister Khanates of Kazan and Astrachan by the rising power of Russia, sought the protection of the Sultan of Rúm, and served him in his wars : but they never formed an integral part of the Turkish army. They were generally detached as light troops, in the same manner as the Akinji : they were always under the orders of their own Khán and his officers, and they retained their Mongolian organization and tactics.

The Turkish army was always accompanied by a Camp Bazar on the Indian principle, which is, I suppose, common to all Oriental countries, in which the system is suited to the nomadic habits of the people. In this way the Turkish army was often well supplied with provisions, while its adversaries starved : and the numerical strength of its cavalry made cutting its communication a matter of impossibility. When Solymán the Magnificent threatened Vienna in 1532, his army was three hundred

thousand strong, of whom two-thirds were cavalry. The Emperor Charles the Fifth, with the whole resources of the German Empire, Spain, Italy and the low countries at his disposal, could only muster a hundred and thirty thousand men to cover Vienna, of whom only thirty thousand were cavalry.

Christian writers of that age acknowledge also that man for man the Turkish soldier was superior to the European in physical strength, endurance of fatigue and privation, and submission to discipline : though they claim for the warriors of the West the superiority in courage and intelligence.

The Ottoman military law was administered by two "Kâzi-Askar" (Army-Judges), one for the European provinces (Rûmlî), and the other for the Asiatic (Anatoli.) The military punishments were capital punishment by decapitation, the bastinado, and the stick. Knolles says that for breaking barracks at night a Janissary used to be unmercifully beaten with a cudgel by his officer, "while he, like an ape, kisseth the hand that chastiseth him."

The regular troops raised by conscription among the Christian populations, such as the Topjis and Janissaries, were what Sir Bartle Frere called "celibate gladiators"—they were never allowed to marry. But when Turks came to enlist in them, the prohibition against marrying was first relaxed, and then allowed to fall into abeyance altogether.

Prince Cantemir, the historian of the Ottoman Empire, a Valachian, who was long a hostage at the Court of Sultan Muhammad the Fourth, and served in many of the campaigns which he describes, says, that by the Turkish military regulations, none of the unpaid troops, such as the feudal cavalry and others, could be called on to serve with the standards for more than six months at a time. This for long was productive of no great inconvenience, as the practice of armies going into winter quarters was universal in Europe ; but in later days, with victorious enemies pressing on the frontiers of the Empire, it proved a serious obstacle to the success of the Turkish arms.

Into the subject of the armament and tactics of the Turks I do not propose to enter. I shall only briefly notice the authorised or standard plan for drawing up their army given by Prince Cantemir when the Grand Army was headed by the Sultan in person. It was, of course, subject to variation according to the nature of the ground and the number and description of troops engaged. The army that was sent to quell the revolt of the Christians in Transylvania in 1661, consisted of seventy Sanjaks (standards) of cavalry and twenty regiments of Janissaries and Topjis.

In the army of Sultan Mustafa the Second defeated by Prince Eugene at Zenta in 1697, out of one hundred and thirty-five thousand men, twenty thousand were Janissaries, and four thousand Topjis (gunners), Khumpârajis (bombardiers), and Jabajis (ordnance train men.)

The prescribed method of drawing up the army in battle array was in two lines, or rather in one long line with a reserve in second line. The first line was divided into centre and wings (Qalb, Maimana, and Maisara), the feudal cavalry of Asia formed the right wing, that of Europe the left wing : the Janissaries occupied the centre. The artillery were planted

between the centre and wings, or along the front of the line. The Grand Vazir commanded the whole line, and was posted with his standards and retinue in rear of the centre of the Janissaries. Near him was the Tábal-khána or band of drums, fifes and cymbals, whose music gave the signal for the onset, and who continued playing during the battle.

The Sultan himself rode in the centre of the second line, escorted by his troop of Mutafarrika or horse-guards, and his regiment of Bustanjis or foot-guards. On the right and left were formed the regular or paid cavalry. The Sipáhis of the Yellow Standard as the senior corps on the right or post of honour; the Sipáhis of the Red Standard on the right.

In the rear of the Sultan's standard were the bazar, camp equipage and baggage, formed in as compact a mass as possible, and guarded by detachments of Sipáhis, and behind it came a rear guard of troops of all arms commanded by a Pasha.

The army of Persia, after that country emerged from the subsiding waters of the Mughal deluge, was organized, so far as it can be said to have been organized at all, on the tribal system. The government of the Saffavi monarchs who long reigned in Ispahán was principally supported by the seven warlike tribes of Persian Turks, the Kájárs, Afshárs, and others who were commonly known by the wide name of "Kizilbashia" (red heads). Each family in a tribe had to furnish one horseman or more (according to the number in the family) for the Shah's service in war. The number of these horsemen is said to have amounted to over fifty thousand, and there were also horsemen of other tribes who raised the total number of the Persian cavalry to eighty thousand. These men could only be called out for service through their hereditary chiefs, and would only serve under them. When called out they received pay from the Shah, at the rate of 5 or 6 tomans (£2-10 to £3) and two ass-loads (Kharwár) of grain annually. But very few of them stayed by the standard for as long as a year at a time, as the practice of going into winter quarters was as much *de rigueur* in Persia as in Turkey.

There was also a foot-militia under the orders of the Provincial Governors, who acted as a Gendarmerie in peace time, and served in war-time in irregular bands under officers chosen from among themselves. They were entirely without permanent organization or regular equipment. When in the field they received pay from the Shah's treasury, about the same amount as the cavalry got. Their numbers when at their strongest are supposed to have reached eighty thousand.

Shah Abbas the Great, who flourished at the same time as our Queen Elizabeth, found his dependence on the tribal chiefs so detrimental to his military operations that he raised a Royal or Shah's tribe, into which he admitted men from other tribes, and so obtained a considerable body of horsemen dependent upon himself as their feudal chief; and he went further than this. Learning by his experience of Turkish wars the value of regular troops, he raised a small standing army in imitation, it is said, of the Turkish Sipáhis and Janissaries.

The cavalry of this force numbered twelve thousand men, and were called the Shah's "Ghuláms" or slaves. They were partly purchased slaves from Circassia and Georgia, like the Egyptian Mamelukes,

and partly Persian volunteers. This corps exists to the present day, and forms the royal body-guard in Persia. Its numbers had dwindled down to three or four thousand men in the reign of Fath Ali Shah, and, I believe, they are now still further reduced.

Artillery was first introduced into the Persian army by Shah Abbas, with the assistance of the brothers Shirley, and other European adventurers. The park of artillery was very rudely equipped and organized. The contemporary writer, Purchas, says that Shah Abbas had five hundred brass guns and sixty thousand musketeers, which is probably an exaggeration.

The corps of "Tufangchis" which formed the infantry of his standing army did not exceed twelve thousand men. They were called "Kular" (Turkish for slaves) like the Ottoman regular soldiery. Many of them were kidnapped from the Christian countries of Georgia, Mingrelia, &c., and forcibly converted to Islám.

The whole of this standing army was quartered in the vicinity of the Royal Court, and its officers were appointed from among the courtiers and favourites of the sovereign. Most of it disappeared during the period of anarchy which attended the fall of the Suffavean dynasty, but the remains of it proved useful to Nadir Shah.

This monarch's ever victorious army, with which he re-conquered Afghanistan, subdued India, Bokhara and Khiva, and overthrew the Turks in several campaigns, was entirely his own creation, and was as blindly devoted to him as the Grande Armée to the Great Napoleon. It was organized principally on the tribal system, and was a heterogeneous mass of mercenaries who had no bond of sympathy except their loyalty to their chief. The Afghans, Turkomans, Bakhtiyaries, &c., were kept in separate corps under their own chiefs, and there were as many foreigners as native Persians in the army. The strictest discipline was maintained by Nadir; and the immediate cessation of the massacre of the inhabitants of Delhi at his command is quoted as an instance of the perfect control he possessed over his troops. The sudden reduction of undisciplined hordes by such men as Chengiz, Taimúr, and Nadir to a strict discipline, such as is believed to be the growth of years in European armies, seems surprising: but is really not so when we reflect on the means by which it was enforced: capital punishment, without enquiry or trial, being the usual penalty for the slightest infringement of it.

On the death of Nadir the army disbanded itself, every corps going off under its own chief. Ahmad Abdáli, who commanded the Afghan contingent, and happened to have the guard of the treasure and the park of artillery at the time of Nadir's death, went off to Kandahar where he made himself King of Afghanistan, and Nasir Khán the Baluchi similarly possessed himself of the supreme authority in his own native country. Heraclius, or Harkal, who commanded a Georgian corps, set up the old Christian kingdom of Georgia again with himself as its king in Tiflis, under the protection of Russia.

The army of the Afghans who now for the first time enjoyed an independent national and political existence under Ahmad Shah and his successors, was at first principally composed of the troops which had

belonged to Nadir's army : and as these gradually disappeared from the want of revenues to maintain a standing army, their place was taken by tribal levies. The Duráni kings maintained a considerable body of Kizilbâsh horse as their personal guards, and their artillery was also served by Persians or men of Persian descent. In the army with which Ahmad Shah shattered the Mahratta power at Paniput he had sixty thousand men, of whom only thirty thousand were Afghans, and the rest Hindustanis and Panjabis. Concerning the Uzbek armies I have no detailed information. That of Bokhara was computed to have mustered sixty thousand horse at the end of the last century, but they never put more than thirty thousand into the field against the Persians or Afghans. They appear by the titles of their officers to have been organized on the decimal system of the Tartars.

In Hindustan under the Mughal Empire, army organisation never got beyond a very rudimentary stage.

The governors of provinces were the army chiefs, were responsible for the military service of their own governments, and there was no central organisation. Their official title was *faujdar*, and the *Nawabs* of the Carnatic, Masulipatam, &c., had no right to any other appellation : the designation of *Nawab* was usurped by them to enhance their own importance.

The Emperor Akbar tried to introduce some method of organisation by registering all the Musalmâns who were liable to serve as horsemen in the wars, under the name of "Ahdi" and fixing their allowances. There is a casual mention of a corps of infantry on the Indian side in the battle with Nadir Shah at Karnâl called the "Kamal-posh," or "woollen-wearers."

It was in India, however, that Asiatic troops were first organized as regular soldiers. The French under Dupleix at Pondicherry in the middle of the last century drilled and disciplined "the miserable Kâfirs of Telingana," and their example was speedily followed by the English. Ibrahim Khân Gârdi, who owed his nick-name to his having been the commandant of Bussy's body-guard at Hyderabad, raised a brigade of *sepoys* on the French model, which he unfortunately hired to Sudasheo Ran, the Mahratta, for the campaign which ended in the fatal disaster at Paniput. In that battle the brigade covered itself with glory, and held its ground long after the rest of the Bhan's army had taken to flight, till it was overwhelmed by the multitude of its enemies, and its brave commander killed. After this battalions of *sepoys* and corps of *Golundâz* gradually took the place of the hordes of irregular cavalry, which had hitherto formed the bulk of Indian armies. But the great want was that of capable officers. Hyder Ali and his son Tippu were driven to employ their English prisoners to drill their battalions. They tried to get infantry fit to meet the English *sepoys* by forcibly enlisting Hindu and Pariah lads and converting them to Islâm.

These boys were called *Chelas*, and were most of them prisoners taken in the districts ranged by the armies of Mysore. The experiment turned out badly, principally owing to the unfitness of the Musalmân officials who superintended it, who, of course, ill-used the boys, and embezzled their clothing and rations. The English drill masters were equally ill-

treated. The Chelas always deserted on the first opportunity. Hyder and Tippu had some very fair battalions of old Musalmáns in their army drilled and disciplined by French adventurers. The words of command were all given in Persian. Years ago, I met an old pensioned sepoy who could repeat the words of command given in Tippu's army in which his father had served. The only one I can remember was "Tufang pesh" for "present arms."

There is a corps of sepoys among what are called the "city troops" at Hyderabad in the Deccan, which is called the French corps, and is said to be a relic of the Sepoy Brigade raised by Bussy, and afterwards commanded by Raymond. The men are dressed in white jackets and trousers, and wear a broad-topped chako, like those worn by European troops at the commencement of the present century. I heard that in this corps the words of command are still given in French; but I do not know if this is true. When Colonel T. E. Gordon was in Yarkand in 1874, there was a Panjábi there, named Nabi Bakhsh, who had been trained in Ranjit Singh's army, and had left his country to seek his fortune in Central Asia on its conquest by our troops in 1849. His words of command to his battalion were given in an unintelligible jargon, which Colonel Gordon supposed to be intended for English.

The Lion of Lahore's famous Sikh army was organized mostly in imitation of our Anglo-Indian one, but the task was performed by French and Italian adventurers, who had belonged to *la Grande Armée*, and being unable or unwilling to settle down peaceably after Waterloo, found their way to the east in the character of soldiers of fortune. The majority were engaged by Muhammad Ali of Egypt: others found their way to Persia, where they met with but little encouragement, English influence being then in the ascendant at the Court of the Shah. Finally they came on to Lahore where the Maharaja Ranjit Singh secured their services. The names among them best known to fame are those of Generals Allard, Ventura and Avitabile, both of the latter Italians. By their aid the Sikh Maharaja organized a regular army, which drove the furious Afghans from Peshawar, and established his power in India as second only to that of the British Government. Like Nadir Shah's army, however, it did not long survive its creator's death. It committed a splendid suicide, dashing itself to pieces against the power of England on the fields of Firozshahar and Sobraon.

Almost the first contact of the Russian arms made the quick-witted Persians perceive their own deficiencies and the need of regular troops; but it took a hundred years of sound thrashing from the Austrians and Russians to convince the Turks that there was anything wrong with their military system: and even then it was only a few who had their eyes opened: the mass of the nation remained hopelessly blind.

And the few who did perceive the necessity of reform set about it in the most senseless manner, commencing at the wrong end, with external innovations in dress, armament, &c., just the alterations which were most offensive to the conservative feelings of the nation. The almost incredible stupidity with which the reform of the Ottoman army was carried out may be seen by the two following examples: just at the

time that the French were proving by their institution of their Zouave corps that the Turkish costume could be made with ease into a becoming and serviceable uniform, Sultan Mahmud was abolishing the turban as a head dress, buttoning his Nizam soldiers into tight jackets, and bracing them in tight pantaloons. Just as the English in India were proving by their raising and augmenting their irregular cavalry the superiority of the Silahdar system, Sultan Mahmud was abolishing that system in Turkey, and ruining his horsemen by insisting on their riding with long stirrups and keeping their swords in steel scabbards.

Had men like our Anglo-Indian organizers of victory, Skinner, Jacob, and Hodson, had the task of re-forming the Turkish army, the result might have been very different; but unluckily the reforming Sultans imbibed their ideas from martinets, like Baron de Tott, who thought no man could be a soldier without a stiff carriage and hair powder. One great obstacle to efficient reform being carried out among the Osmanlis was their unconquerable prejudice against allowing Christians to actually serve in their army. When Peter the Great formed the new Russian army, he employed the services of French and German officers; but the Turks would have such men only as advisers, and would never entrust the actual command of the troops to them, except they would turn renegade: and thus they lost the services of Moltke himself, and many others who could have served them well: and the same prejudice exists to this day, as may be seen by their treatment of Baker Pasha and other English officers.

The celebrated Ghazi Hasan tried to reform the Turkish tactics by forming their troops in bodies in echelon, supporting each other for attack, instead of in one crowded line; but he was strongly opposed to Sultan Selim the Third's proposed changes in dress and armament, and his reward for his long, brilliant and faithful services was the loss of his head, ostensibly because he had failed to defeat the Russians on the Danube.

A Turk called Omar Agha, who had been a prisoner of war to the Russians, raised a battalion for Sultan Selim on the Russian model; but the Sultan had to procure a Fatwa from the 'Ulama, that the use of bayonets was not contrary to the Koran. This corps served at the siege of Acre, and Selim afterwards increased it to several battalions and uniformed it, calling it the Nizam Jadid, New Regulars; and this name of Nizam has become universal for regular troops throughout the East. Marshal Sebastiani, Napoleon's ambassador at Constantinople, took great interest in Selim's projects of army reform, and assisted him to the utmost of his power: but in 1807 an attempt to put a regiment of Janissaries into uniform led to a universal mutiny, which ended after some hard fighting, and more than one bloody tragedy, in the massacre of the Nizam Jadid, and the deposition and death of the reforming Sultan; and army re-organization in Turkey was postponed for twenty years more.

Suddenly a reformed army started into existence in the very quarter from whence it might have been least expected. In the year 1806 an adventurer named Muhammad Ali succeeded in making himself Pasha of Egypt, and in getting his appointment confirmed by the Porte. He was a Turkish soldier who had come over to Egypt with the army

intended to co-operate with the English in expelling the French, and he gradually, by his crafty ability, rose to the highest offices in the country. In the circumstances attending his rise and in his character there is a strong resemblance to that of Hyder Ali : like Hyder, too, he had seen French and English soldiers, and had observed their superiority. His first object when he became governor of the country was to provide himself with a regular army. But it was some time before he could accomplish his cherished project. The Mameluke Beys stood in his way till he succeeded in trapping them and massacring them in 1811. As soon as he felt himself the undisputed master of Egypt, he commenced his operations. His first experiment was on the Turkish Janissaries who formed the garrisons of Cairo and Alexandria ; but they showed their teeth so significantly that he promptly desisted from meddling with them. However, he succeeded in despatching them to conquer the Soudan for him ; and he was not very sorry when most of them perished with his son Ismail Pasha at Shendy. He then set about forming an army of Soudanese blacks, who made very docile and tractable soldiers, but some mysterious murrain seized upon them, and they died like rotten sheep. Their camps became vast hospitals, and they died so fast that the Pasha was obliged to give up his experiment. He now turned to the only source of supply still available : the despised Fellaheen of Egypt who had not known what it was to bear arms for one thousand years. In vain they put out their own eyes, or cut off their own thumbs to escape his press-gangs : they were remorselessly swept into the net. At the same time he was lucky enough to secure the services of a number of the officers of Napoleon's *Grande Armée*, who had been set adrift by the capitulation of Paris. Most of them became renegades : one of them, named in his new faith Suliman Pasha, was a man of great talent and address, and was Adlatus to Ibrahim Pasha in all his campaigns : and it is said that the latter had really no merit either as a strategist or a tactician, and that his victories were really due to the counsels of the Frenchman. Ibrahim was at all events fond of soldiering, and more of a soldier than most Turks in modern times : and under his command, with the aid of the foreign officers, the abject Arab-Egyptian Fellaheen were made into an army which marched and fired with the precision of a machine. The company officers were Turks and European renegades of doubtful nationality from all the holes and corners of the Levant. The new army was not left long idle : its first task was to drive the Wahábi fanatics from the holy cities of Mekka and Medina. These ferocious warriors of the desert had in their zeal taken up arms to restore the pristine purity of the faith of Islam, and had chased the Turkish sons of Belial from the Holy Precincts. In three bloody campaigns, not without many vicissitudes of fortune, European training and guidance vindicated its supremacy over natural valour and fanatical fury ; and the Wahábi movement was completely crushed. The next enterprise of the new army was against Crete, which was in the hands of the insurgent Greeks, and which was reduced to obedience in one campaign ; while the rebels on the main land had been holding out for five years against the whole weight of the Ottoman empire.

Sultan Mahmud was astonished at the success of the Egyptian arms, and he immediately sent to Muhammad Ali to borrow officers from him to reorganise his own army, and to teach the Janissaries the goose-step and the manual exercise. They were lent to him; and the result was a mutiny in which the Egyptian drill-masters lost their lives, but were avenged by the slaughter of seven thousand Janissaries amidst the flames of their blazing barracks, and the dissolution of the corps.

Sultan Mahmud now had a *tabula rasa* to work upon; and the Firmáns of the 29th May and 16th July, 1826, announced the abolition of the old Osmanli army system, and the establishment of a new army to be recruited by conscription, under the high-sounding title of the "Askar-i-Jadidi Mansúriya, or "New Victorious Army." But the Janissary leaven was still so strong in the nation, and the objection to the new dress and drill so obstinate, that the Sultan was fain to content himself by enlisting boys as recruits, who proved often physically unable to perform the duties of soldiers. The new victorious army was well nigh destroyed by the Russians in the campaigns of 1828 and 1829, and the Sultan and his indefatigable Vazir Rashid Pasha had hardly succeeded in forming another, when it was again destroyed by Ibrahim Pasha and his Egyptians on the fields of Homs, Koniah, and Nezib.

From that time to this the process of army reform in Turkey has been as continuous and unflagging as it has been for the last twenty years in Great Britain. Only nobody is much the better or the worse for it. Its history may be summed up in a few lines: admirable schemes of organization on paper, never carried into practice: large rewards given to distinguished foreign experts for the favour of their advice, which is never taken: a body of officers, not only careless and ignorant of their profession, but devoid of *esprit de corps* and honorable feeling: and general indifference to, or even contempt for, the army on the part of the monarch and the people. To such a pass has the great military nation of the Osmanlis come!

Army Reform in Persia was inaugurated much more smoothly and easily. At Teheran there were no sacred soup-kettles to abandon, no graves to be dug for departed Janissary glory. The Persians had learned a lesson from the defeats which they had suffered from the Russians when Georgia and the Western Coasts of the Caspian were successively absorbed by the Northern octopus: and the French Mission of General Gardanne, who was sent by Napoleon the Great to excite the animosity of the Persians against the English in India, afforded them the opportunity of improving themselves which they desired. Prince Abbas Mirza, the son of Fath Ali Shah and Governor of Aderbaijan, raised a corps of regular troops in his own province: they consisted of three regiments of cavalry of four hundred sabres each, an artillery corps manning twenty field-pieces, of which the guns were horsed: and twelve battalions of infantry, each one thousand strong. These were all drilled by the French officers; but shortly afterwards England having succeeded in supplanting France in the affections of the Sháh, their services were dispensed with, and they were replaced by

English officers of the East India Company's army. The men of each regiment or battalion were all recruited from the same tribe, and their company officers were cadets of the chief families of the tribe. To these new troops Abbas Mirza gave the name of "Sar-báz" (lit. players with heads), and this term is used to this day in Persia and in Persian-speaking countries for a regular soldier, just as we use the word Sepoy in India. At the same time Fath Ali Sháh himself raised a similar corps at Teheran called the "Ján-báz" (players with life): their strength was eight or ten thousand. They must have been afterwards disbanded or amalgamated with the Sar-báz: at all events their peculiar designation no longer exists: it may be remembered that the troops we raised in 1838 for Sháh Shujá's service in Afghanistan were also called Ján-bás.

Abbas Mirza spent much pains and money on his regular troops, whom he fondly hoped would some day chase the Russians from Tiflis: but Paskievitch's campaigns of 1827 and 1828 dissipated his hopes and brought the Russians to Erivan. Sir John Malcolm, who was ambassador from the East India Company to Abbas Mirza's father, vainly tried to dissuade the Prince from raising regular troops: pointing out to him that the revenues of the country were insufficient for their maintenance in a state of efficiency: that from want of good officers he could never make them equal to the Russians, and that the irregular cavalry, which was the chief strength of Persia, would probably be neglected to provide for the new levies.

And afterwards a Russian officer who served in Paskievitch's campaigns said that it was an easy matter fighting the Persians now to what it was in the last war (1809): "then," he said, "we never knew what it was to rest; the Persian cavalry was ubiquitous, and it was no use trying to bring them to a fair fight: they were here to-day and gone to-morrow. Now we sleep at our ease, and can always find their army when we want it."

The Duke of Wellington, then Colonel Wellesley, expressed similar sentiments when his brother the Governor-General asked his advice on the proposition for prohibiting the Mahratta princes keeping up regular establishments of infantry and artillery. "Encourage them to do so by all the means in your power," was his reply; "their guns and infantry battalions will become our prey without fail on the first field of battle, and meanwhile they will have neglected their irregular cavalry in which this real strength lies, and which alone can do us any mischief."

Abbas Mirza would not listen to Sir John Malcolm's words of wisdom, but time has proved their worth. The splendid and numerous irregular cavalry which Persia possessed in the last century is a thing of the past, and instead of it she now possesses a very worthless imitation of a European standing army, badly officered, badly equipped, badly paid, and badly organized.

When Russia declared war against Persia in 1826, England, not wishing to be mixed up in the quarrel, repudiated her engagements with the Sháh, and withdrew her officers from his army. Prince

Abbas Mirza died soon after the unsuccessful termination of the war, and the army he had taken so much interest in was neglected, and allowed almost to go to pieces. The Persians soon discovered that the presence and supervision of European officers were absolutely necessary to its efficiency, and relays of foreigners from most of the military nations of Europe have been by turn engaged to carry on the work begun by the Englishmen: refugee Poles, Frenchmen, Italians, Austrians, have been successively employed, and now, I believe, the Sháh has had recourse to the Russians, whom he long avoided on account of their dangerous proximity. When the present Sháh was in Europe in 1874, he engaged a number of Austrian officers to aid him to improve his standing army, but from all I can hear, their efforts have not been crowned with much success; and they have now been sent back to their own country.

The great want of the Persian army is that of all Oriental armies—an efficient and trustworthy body of officers. The company officers in the regular regiments are not looked upon, or treated, as gentlemen. The Persians, who were, originally at least, of an Aryan stock, shew more receptiveness, and more aptitude for acquiring civilized customs than the Turks or Arabs, but still their standing army is decidedly inferior to that of the Turks, the tribal system is still adhered to in Persia, and their regiments are recruited from one particular tribe. This certainly popularises the service, and the horrible press-gang system of Turkey and Egypt is not known in Irán.

The Persian infantry is organized in regiments of three battalions, on the continental system. A battalion is called “Fauj.” “Tip” is the term they use for a regiment. Their titles of military rank are as follows:—

Commander-in-Chief	...	...	Sipáh Sâlar, or Sardâr-i-kal.
General of Division	...	...	Amir i-Tomán.
General of Brigade	...	...	Amir-i-Panj (hazár understood.)

It will be observed that they use the old Mughal term Tomán for a division of ten thousand men.

Colonel	...	...	Sartíp.
Lieutenant-Colonel (Battalion Commander)	...	...	{ Sarhang.

The same word is called “Syraug” by Anglo-Indians.

Major	...	...	Yáwar (helper).
Captain	...	...	Sultán.

I am at a loss to explain how this word, which means a monarch, came to signify also the commander of a company: its use in this latter sense is quite modern.

Lieutenant	Naib.
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A literal translation of the European term.

Quarter Master	Vakil.
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This officer does not rank as a commissioned officer in the Persian army. It is curious that the same term “Vakil” used often to be applied to the Quarter Master’s writer in the Madras army.

Corporal	Deh-bashi (lit. commander of ten).
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The Osmanli army is organised in the same manner in regiments of four squadrons and three battalions each, but it is besides divided into three classes or Bans, like the Prussian regulars, Landwehr and Landsturm or more like our Line, Militia and Volunteers ; for though the Turkish reservist is supposed to have been trained in the ranks for a certain number of years (their arrangements are always perfect on paper) it generally turns out that he has had no training at all. These three classes are called the "Nizám" (Regulars), "Radíf" (Reduplicate), and "Mustahafiz" (Fencibles).

Their military ranks are—

Commander-in-Chief ... Sardár Ikrám.

This is an appointment only made during actual war time. At other times the chief control of the army is vested in the War-Minister or Saraskar (pronounced Saraskiár) under the Sultan.

Corps Commander ... Múshtr.

This word etymologically signifies a Councillor : I have heard it said to be a corruption of the French "Maréchal," but this does not seem likely.

Divisional Commander... Farík.

Perhaps from "Firka," a division.

Brigadier General ... Amír Livá (lit. Lord of the Banner.)

This rank is commonly called Livá alone and its holder spoken of as the Livá Páshá.

Colonel ... Mír Alái.

Chief of the Alái or regiment ; a battalion is called Tábúr.

Lieutenant-Colonel ... Káim-Mukám (lit. Deputy.)

This officer occupies a position analogous to that of an Italian Lieutenant-Colonel, between the Regimental and Battalion Commanders.

Battalion Commander ... Bin-báshi (lit. commander of a thousand).

This rank is usually translated Major in English, but the French term • Chef de Bataillon expresses it more accurately.

Captain ... Yuz-báshi (lit. commander of a hundred).

A company is called "Buluk" by the Turks ; "Dasta" by the Persians.

Lieutenant ... Mulázim.

Sergeant-Major ... Cháush-báshi.

Sergeant ... Cháush.

Corporal ... On-báshi. (lit. leader of ten).

The adjutant in the Turkish army is called Kular-Aghási—"Lord of the Slaves," a term which seems to have descended from the old organisation. In Persia he is called by the European derived title of "Adjudán." In the Turkish army all general officers are styled Páshá, and both in Turkey and Persia all field officers have the title of Bey or Beg : the company officers in Turkey are adhered as Effendi, somewhat corresponding to our Esquire, but in neither country is any officer who serves on foot reckoned as a gentleman : and the

field officers are commonly appointed direct, without going through the company grades. Thus they seldom know anything of drill, and never take the trouble to acquire a knowledge of it. In Persia the battalions are drilled by a foreign drill instructor, while the Sarhang sits on horse-back and looks on.

The traveller Vambéry relates how at Herat he was at first puzzled by the etymology of the words "Kornal" and "Jornal," used to denote the Afghan military commanders, and it was some time before he recognised in them the familiar words Colonel and General. All the Afghan ideas of military organization are derived from English sources, but as usual the Amir Dost Muhammad's ideas of army reform seemed to be concentrated on a slavish imitation of the outward appearance of English soldiers, and Arminius Vambéry was astonished to see at Herat the Afghan garrison with shaven upper lips and carefully trimmed whiskers, and wearing chakos with peaks. The Amir Sher Ali laboured hard to form a regular army on the English model which failed him entirely in the hour of his need. With the idea of bringing the army more completely under his own control, he adopted a central organization and ignored the tribal division of the Afghan people, instead of using it as a lever to obtain cohesion and a feeling of *esprit de corps* in the new army. Though the advantages of organization are quite understood in Afghanistan, yet the regular troops are held in little esteem as warriors; and it may be observed that Muhammad Ali Pasha of Egypt, though the bulk of his forces was composed of regular troops, always kept up several regiments of Arnaut or Albanian irregulars whom he valued more than all the rest of his army put together. The Afghans are a nation of soldiers, and would doubtless make splendid regular infantry if they could be inspired with confidence in their leaders and their weapons.

Army reform has even penetrated into Turkistan, and Nasrulla, the late tyrant Amir of Bokhara, engaged an Osmanli officer from Istambul to drill and discipline his Bokhariots; and when Vambéry visited that capital, he saw the newly raised "Sar-báz" wearing European accoutrements over their clumsy Bokhariot dresses. It is said that the treacherous Amir poisoned his Turkish drill instructor, enraged by his openly expressed contempt for the noble Uzbeks, who afterwards ran before a handful of Russians without stroke struck or shot fired.

In the Bokhariot army the titles used are a mixture of Persian and Turkish. Min-báshi, commander of a thousand; Pansad-báshi, commander of five hundred; Yuz-báshi, for a captain; and Panjah-báshi, for a lieutenant. The old Mughal decimal division of command is still observed in Turkistan. The army of Bokhará will probably not exist long as a separate organization, as the total absorption of the state by the Northern Colossus cannot be long deferred.

Yakúb Kushbegi, the Ataligh Gházi, during the short interregnum of the Musalmáns in Yarkand and Kashgar, applied himself sedulously to organize an army that should enable him to preserve his independence between his two powerful neighbours. He obtained the services of some Turkish drill instructors, some Russian deserters, and some Panjábis and Hindustanis, probably refugee mutineers. Thus one

of his regiments was drilled and organized as a Turkish regiment, another as a Russian, a third as one of Ranjit Singh's old Sikh regiments, while a fourth, composed of Tunganis and Chinese, adhered to the armament and tactics of the Chinese army. The troops, like those of other States of Turkistan, were divided into "Jigits" or mounted infantry, and "Sar-baz" or infantry proper. They were well clothed and rationed and fairly well paid.

This apparently hopeful experiment in army reform was put a stop to by the death of the Ataligh Gházi and the overthrow of his kingdom by the Chinese in 1877.

The attempts at army reform in Tunis and Morocco have been as futile as in other countries of Islám.

The French occupation of Tunis has reduced the Tunisian regular troops to a police force; all they were ever fit for: and nothing more lamentably ludicrous can be imagined than the condition of the regular army of Morocco. It is drilled by a few rascally European renegades, deserters from the French Foreign Legion and Penal Corps in Algeria.

The failure of army reform in all these countries is no doubt to be ascribed to the general and progressive decay of the system of Islám, which is apparently not to be arrested except by the extinction of its political existence: and to the imbecility of the rulers and statesmen, who, to do them justice, are quite as unable to manage civil affairs as military matters: but what makes any project of real army reform impossible among these people is the absolute want of competent officers: not only of officers skilled in the technical knowledge of their profession, but of men who could be turned into officers—men who would fear dishonour more than death, and care for fame and glory more than for pay and plunder.

Compare Hodson's horse with a regiment of the Amir Sher Ali's regular cavalry, or a battalion of French Turcos with one of the Tunisian Nizám. The men are the same, but the difference just lies in the leaders. In one case they are fighting under a foreign flag, and for an alien race; but they have confidence in the men who lead them, and they will never turn their backs on a foe. In the other case, though they may be fighting for their creed and country, ten to one they will act like arrant cowards whenever they are put to the push. Soldiers must look up to their officers: and the native soldier recognises in the Frenchman or Englishman a superior being whom he is content to follow and obey. The late lamented General Skobelev, when eulogising the officers of the German army, says that, like Olympian gods, they look down half contemptuously on their soldiers. Certainly I believe that the military successes of the Prussians are due not so much to their strategy, tactics, or organization, as to their high military spirit, which is fostered by the example of their corps of officers, members of a poor and proud aristocracy, who care for nothing but the profession of arms, and despise everything not connected with it. If the German officers had been raised from the ranks, there would have been no Sadowa or Sedan.

But in very few Oriental countries is there a class of hereditary gentle-

men and noblemen, such as were found ready to hand to officer European standing armies : and where such does exist, as in the chiefs of tribes in Persia and Afghanistan, its sions cannot be brought to serve in an inferior position. In the armies of Europe also, at first, lieutenants and ensigns of infantry, were often men of very inferior social position : and it was only by rigorously enforcing the rule that every officer should rise in succession, through all the commissioned grades from the lowest, that this disadvantage was got rid of. It was Louis the Fourteenth (who was indeed the real founder of standing armies), who had the good sense to insist on gentlemen serving on foot in the infantry, and even in the artillery ! at that time looked on as so deep a degradation that all the Grande Monarque's arts and wits had to be put into requisition to obtain gentlemen cadets for the corps. No monarch has as yet been found in the East, however, to induce the sons of Khans and Pashas to serve as subalterns in the Nizám. The day when a Sultan of Turkey and Commander of the Faithful was proud to shew himself in the dress of a subaltern officer of the Janissaries has long since passed away ; and the gradual but accelerating compression of the sovereignty of Islám between the encircling arms of France, England, Russia and China, will probably before very long put an ignominious conclusion to the history of army organization among Oriental nations.

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A FEW REMARKS ON PAST AND HINTS FOR FUTURE POSTAL OPERATIONS IN THE FIELD.

By W. T. VAN SOMEREN, POSTAL DEPARTMENT.

ONE of the latest phases of advancement in time of war is the appointment of a system of postal operations, to meet the requirements of the force in the field; and it is from the experience gained during the first phase of the 1878—80 Campaign in Afghanistan that I endeavour, in these few lines, to point out what I consider would be the best system for such operations.

It is essentially necessary that the officers deputed for the arrangement and maintenance of postal operations should be thoroughly conversant with postal work in all its branches, from the system of accounts in an office to the details of appointing and working a line of runners or a horse dāk. It is also necessary that they should be of very active habits, to be able to move about rapidly up and down the lines of communication at a moment's notice. I need hardly add that the position of the men should be such that they can freely move among the officers, for in this way little irregularities which may be existent are brought to his notice which would only be made the subject of complaint in either the newspapers or officially; and, being sent for on enquiry, would only harass and worry the official, whose time is, as a rule, very fully taken up, if he be really supervising the arrangements as they require. I cannot urge this point too strongly. A willingness manifested to meet all reasonable requests on the part of officers, and remedy all defects pointed out by complainants as long as the one or the other do not clash with rules, will save an inexplicable amount of trouble, both to the officers in charge of such postal arrangements and to the Postmaster-General's Office, to which all such complaints will be addressed if the postal officers with the force be not of the position and description indicated. So much for the supervising officer's knowledge and *status*.

As regards the subordinate staff. The staff in a post office in the field is subject to a great deal of annoyance in very many ways, and it is very necessary, therefore, that the postmasters chosen for such appointments should not be men who know next to nothing of postal work; and during the Campaign to which I refer this was sadly the case. The heavy drag for men on the Punjab was more than could be coped with, the demand being greater than the supply available; and this point requires much consideration. How, in the event of an outbreak of war, is the department to meet the larger demand for efficient

postmasters and clerks and postmen? The staff available is very small indeed; for very very few offices, as now constituted, have a larger staff than is essential for their efficient working, and it too often occurs that clerks in a post office are kept to one branch of work, and when placed at another are quite at sea, and such men in the field are next to useless, and unless they by experience be able to answer references made by the public, I need hardly say what the natural result is,—the office is at once dubbed as inefficient. The inducement of higher pay available in the field is capable of very much abuse. Higher pay should certainly be granted; but the officers in India deputed to select men for service should not sacrifice the field offices to those in India, and send either men who have just been appointed to post offices as clerks in subordinate appointments or men who have only a knowledge of one branch of post office work. By experience I know worse even than this is possible. Men who know no post office work are willing to proceed to take up such appointments by the inducement that the pay given is higher than they could get in India if appointed to the post office; and relatives and friends of men can in this way be introduced to these highly paid appointments at the sacrifice of efficiency and to the despair of the Field Force Superintendent of Post Offices, advantage being taken of the opportunity of in this way bringing these men, who have in all probability failed to get on elsewhere, into the service of the department. I point out these facts with no desire to carp at the administration responsible for such a state of matters as I represent, for the difficulties to be met were so great that I do not honestly believe, with the paucity of working hands available, such irregularities were avoidable, and I therefore must not be understood to blame any one; but to prevent the recurrence of such I would desire that the following *desiderata* be given their due consideration:—

(1.) That every clerk in the post offices in India be passed through every branch of post office work in that office, and that Divisional Superintendents be required to personally see that this is attended to by changing the duties of clerks in the "List of Distribution of Work," suspended in the offices, at their inspections, till each man has passed through all branches.

(2.) That immediately a clerk has passed through all branches of work efficiently, the postmaster should report the fact to the Divisional Superintendent, who should keep a list of all such men, and submit a copy half-yearly to the Postmaster-General.

(3.) In the probable event of an outbreak of hostilities the Superintendents should be written to, to depute certain men from this list for service. Similarly, independent head offices should submit such lists to the Postmaster-General's Office, that the Postmaster-General himself may select those men he deems right for service.

(4.) It would be best that men should be selected as much as possible from places where the garrisons have been reduced by troops being sent to the front. The work in such offices would be necessarily lighter, and more time would be afforded to teach their work to the new men who have taken the places of those sent away.

(5.) In no case should men who have not held appointments in the post office be deputed to a field office; and only as a *dernier ressort* should any man be sent who has not passed through all branches of post office work.

(6.) Such men deputed to the front should carry with them, for delivery to the Superintendent, their orders from the Postmaster-General and last-pay certificate, and be instructed to join as expeditiously as possible.

(7.) Postmen should be sent from wherever practicable who know their duties; and where substitutes are easily obtainable. In the event of troops being sent from another Presidency, postal clerks and postmen should accompany them where the language spoken is different. For instance, in the event of Madras troops being sent up to Afghanistan, Tamil-speaking clerks and postmen would be necessary.

(8.) In the event of war leading into cold regions, the postmen should be supplied with warm clothes and gloves.

EQUIPMENT.

The Superintendent or Superintendents deputed to the front should obtain either 80lbs or 120lbs tents. The Superintendent in charge as head of a department would in all probability be allowed a 120lbs tent; and they will in all probability be allowed 80lbs of baggage, so that their complete personal kit would weigh only 160lbs or 200lbs. This is all that is allowed.

European postmasters would be allowed the same, and native postmasters and clerks would be allowed what non-commissioned native officers are allowed, 30lbs, the subordinate staff of postmen and servants 7lbs each. The Superintendents would each require an orderly and two khalásis for pitching tents, &c., and one personal servant who can cook. I found two horses necessary for the work of supervising a line about 90 miles in length, and two syces only for them. The postmasters, European and Eurasian, in most cases marched on foot; and I think this best, as if once stationed a horse is unnecessary, and the military authorities grudge the supply of food for more animals than are absolutely necessary.

The baggage and camp equipage for all will be conveyed by animals supplied by the Transport Department, and this will be indented for as required by the Field Force Superintendent of Post Offices. A camel by regulation is not to be loaded beyond 4 maunds or 160 seers, and a mule 2 maunds. Arrangements can be made with the Commissariat Department for tents; and for small offices a Staff Sergeant's tent is sufficient, but for the head-quarters and base offices a larger tent is necessary—I think 12' x 12'—and these should be supplied by the department. I need hardly say the amount of camp furniture necessary must depend upon the number of offices likely to be opened, and the Superintendent must make it his duty to keep himself well informed of all probable movements of troops in such numbers as will require special postal arrangements. All that will probably be required is a table and stool for the postmaster and a table and stool

for one clerk in most offices. But a reserve of tables and stools at the base office would serve all cases.

Tin letter boxes for small offices are a mistake. A packet bag suspended at the office door meets the purpose most efficiently. The carriage by camel or mule of tin letter boxes destroys them. "Letter Bag," printed large, on a large-sized mail bag, and emptied as often as full, is far more satisfactory.

In the Head-quarters' Camp and larger offices a tin letter box of large size is advisable, though not necessary.

For sorting purposes, large mail bags tied to the *kanat* of the tent serve the purpose best: each bag to be marked with the label of the post office or section of the Railway Mail Service. From these bags, when the mail is being closed, the letters can be removed and placed in their respective mail bags.

Notice boards of "Post Office," for each office, will be necessary, and a reserve of these should be kept at the base office. A flag at the top of the tent pole, with "Post Office" printed on it, is almost better than a notice board.

The Superintendent will find it no easy matter to bring down his baggage to the prescribed weight. A camp table, camp chair, camp bed, and a basin—all strong, but as light as possible—are all the furniture he actually requires, and a few kitchen utensils, and he will find his second horse useful at times for baggage purposes. A Railway Mail Service portfolio he will find most useful for his office, with the addition of two straps going completely round and buckling.

CARRIAGE.

The Superintendent will require to move about expeditiously, and he will find mules serve his purpose far better than camels for carriage of camp equipage and baggage, and for such he will, before starting, have to obtain food. Additional carriage must be applied for, for carriage of rations and food for himself, staff, and cattle. Rations must be applied for, for the period he is likely to be absent from any Commissariat Depot, for himself and servants.

Postmasters will, when stationed, apply for rations daily for all their establishments, and if likely to move, for the period necessary.

Carriage is to be at once returned to the Transport Department when no longer required.

An escort will always be supplied, where necessary, for the Superintendent or his baggage by the Brigade Major, on application for such.

CARRIAGE OF MAILS.

This is the most difficult undertaking to be efficiently worked in an enemy's country.

I suggest the following:—

Immediately the Superintendent arrives at the base of operations, he should call and see the Political Officer, and ascertain from him the best means of carriage; and if such means can be raised in the country. If such be possible, well and good. He should then ascer-

tain, as far as possible, the nature of the country and the existence of any villages *en route*, and select those at suitable distances as stages for either a horse, mule, or runner dāk line. He should arrange with the Political Officer for the appointment at each stage of the agency required and the rate of payment, and obtain the names of runners or owners of cattle employed as early as possible after appointment. For a force of ten thousand (10,000) men, I found eight horses a stage sufficient, and these at a distance of from six to eight miles apart. It would also be as well to obtain, if possible, from the Political Officer, a man of good position and known in the country, who can be appointed as overseer of the line, and through whom the line can be paid. Headmen of villages should be told of the appointment of this overseer, and that the men, horses, or mules employed would be paid for by him and work under his orders. If necessary, he should be granted a sub-overseer, or even two.

If necessary, the Political Officer will in all probability be able to obtain contractors to take the various stages for supply of fodder for the mules. If not, the supply of grain for them will have to be arranged for through the Assistant Quartermaster-General with the Commissariat or Transport Department. The Political Officer will probably be able to arrange for grass.

From the experience I had, I found horses not altogether satisfactory. They were the property of men in the villages, and continual delays were caused by their being otherwise used; and repeatedly I found all the mails loaded on to two horses and the drivers riding each, and in explanation obtained simply the information that the others were either grazing or being otherwise used. To fine was inadvisable, as the men would in all probability refuse to work any longer, or might make off with the mails!

Remarks made here must be understood to refer to such countries only as Afghanistan, our Eastern Frontier, &c., where the advantages of civilization, as railways, &c., are not met with.

I am of opinion that the very best animal that can be used is a mule, care being taken in the selection of animals. First, they should be large-sized; next, either gelt or mares. A stallion mule ungelts is too vicious for our work. These might be bought either in the country, or, if in insufficient numbers, obtained from India; placed at villages in charge of men from India, and their safety and that of their riders ensured on the responsibility of the headmen in villages. This could be arranged through the Political Department.

The system for carriage I propose is that in force in Australia. One man riding leads another beast, laden, by either a rope or chain attached to the bridle, and the safe carriage of the mails would be best secured by their being strapped to the new model Ordnance Pack-saddle, which should be supplied for the purpose. Before these saddles are sent up they should be re-padded, for I believe experience has shown that too often the padding on receipt of perfectly new saddles has had to be either renewed or very largely added to, as after but a few days' use the padding has settled down and the saddles begin to gall the mules. I might almost say there cannot be too

much padding; all the more so for our work, as the speed we desire to maintain is greater than usual and the friction would be proportionately greater. A mule thus laden can move easily and speedily. The men employed as riders should be armed with a sword (*talwar*). Leather-bags enclosing the transit bags, in which the mail is, would prevent the destruction of the latter by friction. An average speed of six miles an hour could thus be obtained with a mule laden with a maund-and-a-half to two maunds. If mules be not employed the same system of carriage should be adopted for horses, but I cannot recommend the employment of horses from the owners in villages. I could only get them to work at all, by actually living for two or three days from time to time at the different stages, and triding out with each mail and driving the men on. They had no idea of hurrying themselves at all; and I know full well after I left them they travelled on at their own pace. One's hands are so tied, as one actually has no power over men who are absolutely independent, and necessarily efficiency cannot be secured with an unwilling, working agency, and they only worked because they were required to. Their pay they were glad of when they received it, but it was no real inducement to them to work apparently, and only very excessive pay would be such.

The employment of runners is only feasible on branch lines on the main line; the weight of the mails would be too great to employ this agency.

Possibly the Transport Department would make over the required number of mules, but I fear not.

The Superintendent should ascertain from the Political Officer whether it is necessary that a guard should escort the mail, and, if so, he can arrange this through the Assistant Quartermaster-General, from which officer an expression as to the wishes of the General and movements of troops and other details should always be obtained.

Now as regards the carriage of the banghy mail, I am of opinion that this can be carried in the same way, but at a slower pace and with a different establishment, and if parcels are to be carried by the post office at all, it should be done in this way; but I am of opinion that a special restriction on the size and weight of a parcel should be made. I do not think any parcel above 10lbs. in weight and 8 inches long, and 8 inches or 10 inches broad, should be accepted for despatch, and all such parcels should be prepaid in full.

From my experience of the untold trouble we had with parcels at the front, I would suggest not carrying parcels at all beyond the base, but on arrival making them over to the Transport Department under receipt for onward despatch, at their convenience, by convoy. This would have to be arranged, of course, with the military authorities, and unless they agreed to this arrangement, the restrictions I propose should, I think, be laid down. The means for carriage are so limited and the number of parcels so great that I urge these extraordinary measures.

The reason I urge for the prepayment of parcels is that the difficulty of collecting postage is very great at the front. As soon as a parcel

mail arrived, there was a rush on an office, and where there were native postmasters or even a Eurasian or European who had not the determination to forbid it, officers at once walked in and each appropriated his parcel, utterly disregarding or not considering the possibility of their being any postage due. There had not been time to compare the parcels with the parcel lists, and as the parcels were mostly taken delivery, with simply—"This is for me, Babu, I will take it," from half-a-dozen or so officers at once, it can be imagined the postmaster was not able to attend to all at once. A "No Admittance" board is too often a farce. Each officer considers his business of paramount importance, or conveniently fails to see the notice board. In future operations in the field, steps should be taken to have windows in all tents; this can easily be arranged, and the doors of the tent should be fastened down at times of receipt of mails, otherwise work in all branches is very much interfered with. Windows should be cut, where necessary, in the tent, so as to be tied down when not required open. The edges cut should be strongly bound with *nawar*, so as to prevent tearing. If parcels are to be carried by the post office, the parcel lists should be sent with the letter mail and not with the parcels, as the list in the latter case would be destroyed by contact with the parcels.

In the case of letters I think the following plan for recovery of bearing postage is advisable. I found it safest. An officer commanding a regiment made over to the postmaster in advance Rs. 10, and all postage due on articles for that regiment was recovered from this amount, and immediately this was exhausted, the postmaster applied for a fresh advance and withheld all bearing articles pending its receipt. A memo. should be made over to the orderly, calling for letters stating the amount due on bearing articles each day and debitable to the advance, and this would act as a simple check against the postmaster.

A simpler plan would be for the regimental orderly to be entrusted with an advance, and for him to pay the amount due on bearing articles made over to him.

To save the possibility of an office running short of postage labels, the stamp advance should always be ample, and the Superintendent must watch this as regiments are moved from place to place, the garrison reduced at one point, and augmented at another, and to meet the greater demand for stamps the places at which the forces have been reduced should at once be directed to remit a portion of their stamp advance to that at which the garrison has been strengthened.

In the field itself I think all correspondence, official as well as private, should be carried free. This will save the offices a great deal of trouble, only unpaid letters from the field passing beyond and through the base post office should be taxed.

In the Campaign to which I refer all the field offices were sub-offices, and they were found to meet all requirements. A field treasure chest is available, and into this and from this money can be paid in and withdrawn under triplicate receipt, and it should be used as a sub-treasury by offices as much as possible, to save unnecessary transit of cash. Where no field treasure chest exists, cash can be paid to the Commissariat Office, and the receipt obtained must be certified by the

officer in charge of the field treasure chest with the head-quarters before it is submitted to the Comptroller. It will be seldom necessary to draw money, as the amount paid in for applications for money orders will almost, without exception, be found far in excess of requirements for payment.

It will frequently occur that bearing letters will be received at a sub-office while the addressee is elsewhere. Such letters should not be returned to the Head Office, as is the rule in an ordinary time, but sent direct to their correct destination. All sub-offices must send all correspondence, whether paid or bearing, direct to other sub-offices, the amount of bearing postage being entered in a daily account, and these daily accounts must be submitted to the Head Office at the close of each month and dealt with by the Head Office.

NOTES ON THE ANNUAL COURSE OF MUSKETRY INSTRUCTION AND PRACTICE FOR TRAINED SOLDIERS.

BY

LIEUT.-COL. O. R. MIDDLETON, *The King's Own Royal Lancaster
Regiment.*

THE object of what is called musketry instruction and practice in the British army is to teach the soldier to use his rifle with effect in the "field" against a foe.

This year the authorities ordered that to qualify as a "marksman" the soldier must, besides making a certain number of points at the white target with a round bull's-eye, hit seven times out of ten shots a target somewhat resembling a man, lying down at 200 yards, and also a target representing a man standing at distances between 285 and 140 yards.

It has been found, however, that hardly any soldiers in the British army can do this; it is a positive fact that our best men cannot hit a placid figure, either kneeling down or standing up, at these distances with any degree of certainty, and the Commander-in-Chief has been obliged to rescind this order as to the qualification of marksmen.

It is certain that under these circumstances there must be something very wrong in our instruction and practice.

I propose to point out, as it seems to me, some of the mistakes we make in this most important branch of the infantry soldier's training:—

(1.) The first error is the description and color of the target at which the trained soldiers have to fire annually eighty rounds individually, namely a white ground with a round black centre, so utterly unlike anything in nature that he could ever possibly be called upon to shoot at.

It is well known that every good sportsman never will practice at such a target, and many a one has been heard to give as a reason that it spoils his practical shooting. Now why is this? It is because to be a good shot the eye requires education; it must become accustomed to aim at the object that it is required to hit; many a man who can shoot partridges and grouse well cannot without practice shoot rabbits. Snipe shooting requires perhaps more practice than any other kind of small

game shooting, still many a good snipe shot is not good at other game ; and so it is with the target shot. A good shot at a white target with a black round bull's-eye can seldom use his rifle with effect at any other kind of mark ; the eye is educated to shoot at that and at that alone. In the Transvaal and Natal our men had matches in target practice with the Boers, and invariably beat them ; yet alas we know from sad experience which were the better shots in the field—one had been trained practically and the other, as it were, very artificially. Thus, not only under existing regulations have we a false impression of the shooting powers of our soldiers, but they consider themselves good shots, whereas they are only theoretically, inasmuch that they can only hit a fancy target.

(2.) Another mistake we make is, that we enlarge the size of the mark as we go away from it ; thus the system of educating the eye to take a finer sight as the distance is increased is quite nullified. In nature, as we get farther from the object, it appears to the human eye smaller, but at target practice, by increasing the size of the mark, we act contrary to nature and thereby uneducate the eye for practical shooting. A remarkable example of this has occurred this year. Last year the favourite distance for the soldier to fire was 500 yards, the mark being three targets ; this year he has been ordered to fire at 400 yards at that target, the consequence has been that the shooting at 500 yards has fallen off. The reason given by the soldier is, that 500 yards now seems to him what 600 yards did last year, thereby showing that it is a mere education of eye.

(3.) Another fault is that in our practice we never fire down the range, whereas on service our men would have to commence firing at the longer distances first, and gradually get closer to the mark. Here again most of our exercises are unnatural.

(4.) At present the soldier is required to fire at the same distances every year on a measured range ; accordingly he is only accustomed to adjust his sights at these distances and without in any way considering what the actual range may be.

No man is more a creature of habit than the British soldier ; his education tends to make him so, and to be asked suddenly to consider the distance of the enemy, sight his rifle, and fire—three things that he has only been trained to do separately—generally results in a failure.

(5.) In all the present practices (except perhaps in two, namely the moving and disappearing targets, which are not at present universally in use) the soldier is permitted to take his own time in aiming, which is very often several seconds. On service, he would seldom be able to do this. If that union between hand and eye which the regulations so properly enjoin, is to exist, some other exercise than those now practised must be introduced.

The alterations in the present regulations that I would therefore propose are briefly as follows: To abolish the present method of painting the target for trained soldiers entirely, and substitute figures representing men in various positions on a brown or green ground according to the color of the butt.

In the first practice that he be called upon to fire—

- (1). *Individually* 12 rounds, retiring, namely 4 rounds at 3 distances between 150 and 300 yards ; the points of fire to be fixed by a Field Officer and marked with flags immediately before the practice commences, so that the men will have to judge the range.
- (2). " 12 rounds, retiring, namely 4 rounds at 3 distances between 300 and 600 yards ; points fixed by a Field Officer as above.
- (3). " 12 rounds, advancing, namely 4 rounds at 3 distances between 600 and 800 yards ; points fixed as above.
- (4). " 12 rounds, advancing, namely 4 rounds at 3 distances between 300 and 150 yards. In the same

Total ... 48 rounds. manner as above described.

In this practice there should be two targets, one of a man standing and another representing a man kneeling ; the soldier should be allowed to take his choice as to which he will fire at. A hit on the standing figure might count 1 and a hit on the kneeling figure, 2.

I see no advantage in the present extravagant method of scoring.

Second Practice—

- (5). *Individually* 15 rounds, retiring, namely 3 rounds at 5 points as above between 600 and 1,200 yards.
- (6). " 15 rounds, advancing, namely 3 rounds at 5 points as above between 1,200 and 600 yards.
- Total ... 30 rounds.

The targets being arranged to represent gunners serving a gun, cavalry soldiers, and squads of infantry soldiers.

Total in both
Practices ... 78 rounds.

To compete for a marksman's prize, a soldier should be obliged to make a certain number of points in these two practices.

Third Practice—

Should be section firing, commencing at 1,200 yards at targets as suggested in the Second Practice and under the same arrangements.

The sections should commence from the extreme distance and fire 3 volleys at 7 distances in extended order up to 400 yards, 8 rounds "Independent Firing" at 400 yards and 3 volleys in close order at 300 yards. The Sergeants in command of the sections making the best scores should get prizes.

Total ... 32

 110

On the second part of the annual course I have little to remark, except that perhaps if the above was adopted, some other exercises might be substituted for the two practices marked b. c., namely, individual firing at the Figure targets and Head and Shoulder targets.

It should be an understood thing that when firing at troops advancing under 300 yards the aim should be taken at the head and the sights should not be raised, and some such practice might be introduced, but the present method of scoring hits only that are made on certain parts of the body seems to be too theoretical for the soldier to appreciate. I would abolish entirely the present system of skirmishing, and expend the rounds in field firing.

The latter practice, namely field firing, which is the nearest approach to actual warfare, might I think be made even more representative by causing small discharges of powder to take place either by electricity or fuze at intervals, at first from the guns and later from the firing line.

At the moving and disappearing target a quick aim should be taken with both eyes open.

It is generally considered, I think, that the course should be extended over a larger period; both men and officers become tired of the monotony of the ranges day after day, interest flags, and the shooting is hurried over. I should not therefore exercise a company in more than one practice at a time.

What is at present called preliminary drill should take place throughout the year, and therefore it should not be necessary to set apart four days especially for this purpose immediately preceding the first practice. Position drill and aiming should be practised, not at round spots on a wall, but at canvas figures made to represent soldiers, both cavalry, infantry and artillery, in all positions, which should be placed at various distances all over the exercise ground.

The judging distance practice should be made more practical by judging on squads firing blank ammunition and artillery in action, also cavalry halted and in motion, besides trees, building, hedges, &c.

I have only very briefly sketched out the kind of course I should like to see introduced. No doubt it would require much consideration and practical test before being fully decided on, but I feel, and have felt for many years, that our soldiers are very indifferent field shots, and I cannot but think that our present mode of training is not calculated to work much improvement.

OCCASIONAL PAPERS.

MUSKETRY REGULATIONS OF THE ITALIAN ARMY.

TRANSLATED WITH NOTES BY MAJOR M. J. KING-HARMAN, B.S.C.

THE great problem which the military authorities of Italy had to solve was the best manner in which to form an efficient army in which universal and short service was the rule, and they wisely determined that before all things it was absolutely necessary that it should be a good shooting army, and hence it is that we find them paying greater attention to musketry instruction than to any other kind of drill.

One day, at Milan, I was fortunate enough to witness some section volley firing by a company of Bersaglieri, and I was so impressed by the steadiness and rapidity of their fire, as well as by the careful manner in which it was supervised, that I commenced making enquiries regarding the system of musketry instruction in the Italian army, the result of which was that I obtained a copy of the regulations and translated them into English.

In comparing the Italian and the English systems, it seems to me that, whereas their object is to produce a nation of riflemen, we are straining every nerve to produce high regimental figures of merit and a few crack target shots; in fact that we are "cramming" our soldiers in shooting, in the same manner that our boys are crammed for their examinations, but the Italian soldiers are taught in such a systematic, practical manner that they are not likely to forget their lessons as long as they remain liable for service.

I take it to be the great object of a soldier to kill as many of his opponents as he possibly can, and this, in ninety-nine cases out of every hundred, we can only do by good shooting. Now, we all know the truth of the old saying that "the proof of the pudding is in the eating," and I maintain that the proof of good *practical* musketry instruction is that men will shoot well on service; but it is well known that, as a rule, the shooting of our troops on service is, and always has been (since the introduction of rifles) extremely bad; that the bullets generally go over the mark, and that the percentage of killed to the number of rounds fired is ridiculously small. It is stated that during the late fighting in the Soudan the Arabs crouched down to get below the line of fire and rushed in with their swords and spears; but they could not have done this as easily if our men had been taught to fire low, and with fixed bayonets, on the Italian system. We also know how many, or rather how few, Boers and Afghans were killed by our rifle fire; therefore as, up to the present, the men have been good, and we know that their rifles and ammunition cannot be surpassed, it stands to reason, I think, that the system of instruction must be faulty.

In submitting the following translation it is my earnest hope that the entire system of Italian musketry instruction may be given a fair trial in India, as I cannot help thinking that it is much better adapted for

our native army than the one that is now in force ; and that its introduction would be of the greatest possible benefit. Of course I do not imagine for one moment that this statement will be acceptable to the majority of officers in India, but on the other hand I do not think that any one will deny that the instruction given to our soldiers in judging distance is quite insufficient ; that their aiming drill is not as complete as it might or should be ; and that the target practice is too mechanical and unpractical.

Anyhow it would be a very simple and inexpensive matter to test the efficiency of the Italian system by making two or three native regiments in each Presidency work steadily through the course next year, officers and men, including the prizes, &c., and then try the regiments so trained against others trained on our own system, in field firing or in any other *practical* manner. Of course the first and great difficulty would be for the men to unlearn what they have been taught already, and so I would select those regiments that have fewest old soldiers in the ranks, and the youngest and most go-ahead officers in command. The whole system is so very simple that the officers on the musketry staff would work it out in no time, and the cost of making a few diagrams and targets would be very small indeed.

I would draw special attention to the great stress laid upon aiming low so as to include more ground in the zone of fire, and at the same time to make more hits on the target.

THE following précis is taken from a literal translation made by me of the Manual for Musketry Instruction of the Italian army, dated the 22nd February 1881, which supersedes the Regulations of 1874.—M. J. KING-HARMAN.

Instruction in shooting being of the greatest importance to the soldier, it is given precedence over all other instruction.

It is divided into three heads or parts—

1. Aiming.
2. Judging distance.
3. Shooting at targets.

There is also an Appendix containing a chapter on the theory of rifle shooting with the present regulation rifle. All officers, except doctors, veterinary surgeons, and the Pay and Commissariat Departments, should be thoroughly acquainted with all three parts and appendix. Every year all subaltern officers must go through a regular course of instruction and shooting under one of the regimental field officers assisted by a captain.

Captains should also every year be examined in Parts 2 and 3 ; and once a year the whole of the Appendix should be studied by all captains and subalterns under the direction of a field officer.

All soldiers should thoroughly know Parts 1, 2 and 3 so far as they themselves are concerned ; the following only being exempted—chief artisans, passed effective musicians, men attached to the regimental sutler, and those holding staff appointments which take them away from regimental duty altogether.

Instruction to soldiers will be imparted in accordance with the following rules :—

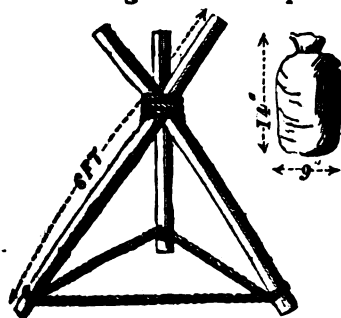
Under officers will be taught Parts 1 and 2 by officers specially told off for that duty, and Part 3, by their own company officers ; and they will be also taught by selected officers so much of the Appendix as they may be considered capable of understanding.

Corporals and soldiers will be taught all three parts by their own company officers, and under officers, under the immediate direction of captains of companies.

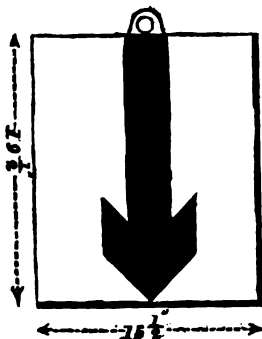
In the annual course of instruction aiming drill should precede judging distance, and must be concluded before target practice is commenced; judging distance drill may either be taught before or during target practice, but it must be concluded before company field firing commences.

AIMING DRILL.

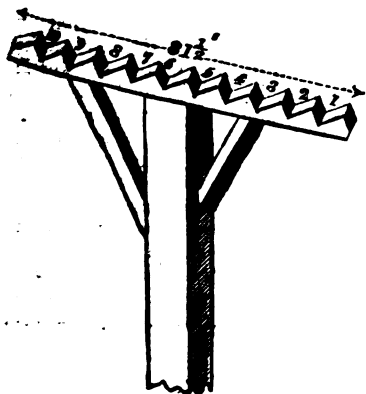
The following articles are required for aiming drill :—



- (a) A wooden tripod having the bottoms of the legs connected by pieces of rope, and a small bag filled with either sand or sawdust, which is placed at the junction of the shorter ends, and on which the rifle is rested when aiming.



- (b) An arrow mark, painted black on a white ground at which the rifle is to be aimed. The board is hung on to a nail in a wall, or on a pole, or stood upright on the ground.



- (c) A stepped support made of a convenient weight, which is stuck upright in the ground and cut into steps so as to suit each wall; the end of the rifle is laid in one of these steps,

For aiming drill the soldiers will be in undress without side arms or pack, but for the other exercises they will wear side arms, and will go through them first without the pack on and then with it.

One instructor drills only eight or ten men in line.

In aiming drill, the sights are always to be laid on the lowest point of the arrow.

First of all the rules for aiming are carefully explained to the men, great stress being laid on the necessity for keeping the sights perfectly vertical (in the book this part is illustrated by well drawn diagrams). Then, after each man has been repeatedly shown how to lay his rifle on the tripod and aim it point blank at the target, the instructor makes each man lay his own rifle without assistance; he then makes the men fall out, and correct each other's rifles, and finally examines all himself.

After aiming with the tripod has been mastered, the men are taught the degrees and elevations marked on the back sight, and how to use them, and they must thoroughly understand this before proceeding to the use of the stepped support, which is used to teach the recruit how to aim freely and correctly in the standing position. It is stuck in the ground in front of him, and he is placed in the position of "ready," and made to bring up the rifle to his shoulder and to rest the lower part of the centre of the barrel in whichever step will enable him to aim with ease at the point of the arrow on the target; care being taken that the man stands in the correct position with the butt of the rifle firmly pressed against the shoulder, and that the barrel is only lightly rested on the support.

The special object of this support is to avoid the tiring of the arm, and shaking of the rifle, which must occur when a man first commences to aim without the tripod, as by its help he can keep on trying until he gets into the way of bringing his eye and the foresight and the object into one line without difficulty, whilst at the same time he is able to keep his correct position. Great stress is laid on the necessity for long and careful training in this exercise, as it is considered that in this manner a man may be taught aiming in the easiest way to himself, and, at the same time, with the least trouble to the instructor.

The squad is then formed up in line at one pace interval, and the men are made to practise aiming in the standing position without any support; this is first done without raising the sights, and then it is performed with the sights raised to any elevation that may be ordered, and with bayonets fixed.

When aiming at very high elevations, the butt of the rifle, instead of being pressed against the shoulder, is brought under the arm-pit, more or less lowered according to the height of the man and degree of elevation, and then firmly pressed against the side of the chest by the right arm; in this way the soldier is not liable to be thrown out of position by straining his neck to catch the foresight. Aiming is then taught in the kneeling, sitting, and lying down positions, as laid down in the manual and platoon exercise book. The men are then taught to aim correctly when leaning or resting the rifle against the corner of a wall, or the side of a tree or post, &c.; they are then taught to aim from behind small mounds of earth, low walls, low parapets thrown up from shallow ditches and other kinds of shelter. When the instruction in aiming has been completed so far, the men are carefully taught how to fire the rifle by pulling the trigger steadily and gradually without jerking or blinking, and for this purpose the stepped support is used at first, so that the whole attention may be fixed on the one operation; afterwards this is well practised without the support, and in all positions. In no case is a man to be kept on at any particular exercise so long as to tire him.

QUICK AIMING AND FIRING.

To teach this, each man is practised in quickly raising the rifle and aiming at targets placed directly in front, or a little on one side of him, in all positions; he will then be made to advance or retire at a walk or double, halting and aiming by word of command in any position. These exercises will be carried out first against fixed, and then against moving targets made to represent men on foot or on horseback; these will be very carefully supervised by the instructors, who, in the case of moving targets, will explain how much in advance of the target the aim should be taken. In all cases the correct position should be adhered to as closely as possible, but the great object to be attained is to aim quickly and to fire directly without making a long pause.

Before commencing each lesson the instructor must go through it himself in front of the men, and must then carefully correct all errors that he observes.

It is then explained to the men how it is that a miss fire occurs, and what should be done on such occasions; also in the case of a cartridge sticking in the breech, how the ramrod should be used to remove it without danger to any one.

After this come the lessons in firing with empty cartridges (capped).

Each man is served out with 18 such cartridges; then the instructor takes five rounds and fires these before the squad, going through all the motions correctly, and explaining everything as he goes on; he then calls out the men one by one, and makes them all fire two rounds standing, and then six more rounds in the other positions—two in each, raising and lowering the sights to any elevation ordered; then the men are formed into two ranks, and made to fire eight more rounds by command as they stand.

After this, several squads are combined under a superior instructor, who makes the men fire four more rounds by word of command, front rank kneeling; after each man has fired one round, the ranks are changed; sights are adjusted to the named elevation.

After this the squads are formed up in two ranks; eight rounds of blank cartridge are given to each man, and the instructor taking a similar number places himself in front of the squad and fires six rounds at a target placed 150 yards off, in such a manner that they are

completed in the space of about one minute; each man is made to fire in the same manner, and is stopped by the instructor at the end of one minute, when this is completed, each man has to fire six more rounds in the minute; kneeling, and also lying down. Then the rapidity of firing is increased to eight rounds a minute standing and kneeling, but in the lying down position the rate of six rounds a minute is not to be exceeded.

All these quick firing exercises are then performed with fixed bayonets.

The target used is the one marked No. 1 further on. Each man is then given two rounds of ball cartridge, and the squad is drawn up in line facing a target (No. 2) placed at a distance of 50 yards; the instructor then takes two rounds, and, placing himself in front of the left file, turning to the right, he shows the men how the rifle should be loaded; he then turns to the front and fires two rounds at the target, standing; each man is then called out and made to do the same, raising the sight to any elevation named, and the instructor carefully points out all faults after each round has been fired.

Throughout the aiming exercises the instructor must constantly impress on the men the following rules, that they should always aim at the foot of the object, unless specially ordered to the contrary; that firing in mass or in line should never take place except by word of command, but that when a

man is isolated he will have to judge his distance and raise his sights himself without any assistance, and that, therefore, he must remember that he ought never to fire at greater distances than 200 yards against single men standing, 300 yards against two or more men kneeling together, 400 yards against two or more men standing together or on horse back.

(Note.—In the original the distances are given in "metres," but for convenience I use the word "yards" instead.—M. J. K-H.)

When objects are moving, the aim must be directed in advance of the direction in which they are going in the following proportions—

$\frac{1}{2}$ of a yard for a man or horse walking 100 yards off.

$\frac{1}{3}$ " " walking quickly "

$\frac{1}{4}$ " " for a horse trotting 100 yards off "

$\frac{1}{5}$ " " galloping "

and the further off the object is the more must the aim be directed in advance of it in the same proportion. When aiming at a moving object, it is not necessary that the position of the feet should be altered, but the whole of the upper half of the body should be moved with the rifle.

PART II.

JUDGING DISTANCE PRACTICE.

The greatest importance is attached to this, which must first be practised on level ground, and then on unknown broken ground, and it must be carried out at different hours of the day, so as to learn the effects produced by different lights, and also with different backgrounds. The course is divided into three parts. Judging by paces, then by sight, and lastly by sound.

On the line of march and on field days, both officers and men should be constantly exercised in judging distances of houses, trees and other objects. Judging distance practice is always performed in fatigue dress.

To measure distance by paces—

Each man must know the length of his own pace which, for infantry of the line, should be 29·53 inches, and for Bersaglieri 33·86 inches. Any distance not exceeding 400 yards in length is first carefully measured out and marked; the instructor then stations himself at the far end, and the sub-instructor draws up the men at the starting point and starts them off one after another, at 50 paces interval, to march up to the instructor; each man counts the number of his paces and on reaching the instructor the totals are noted down, converted into yards, and compared with the correct distance, so that the men know whether they have been stepping too long or too short. The practice is then repeated on another measured distance, never exceeding 400 yards, and so on, until the length of pace becomes uniform. They then pass on to estimate distance at sight up to 500 yards.

A squad of 15 men are marched off towards some fixed point; one man is dropped at 100 yards, two at 200 yards, three at 300 yards, four at 400 yards, and five at 500 yards, in such a manner that they do not cover each other; these men turn about and stand facing the judging squad, until, at a signal from the instructor, they all kneel down, and again at a second signal they all lie down, going through the motions of loading and firing at each position. All this time the squad of observers is engaged in watching them, and noting the difference in size and appearance of the men and arms at each distance and in each position, and the instructor questions each man to see that he thoroughly understands and remembers what he observes. The squad of observers is then turned about, and another group of two or three men is sent off under a corporal to take up position in another direction up to a distance of 500 yards, and as soon as they arrive at the first position

the squad of observers is fronted, and each man is called out and made to guess the distance; the replies are entered in the register, and then the men are told the correct distance: the remaining distances are then judged in like manner, after which the group joins the squad of observers, and another group is sent out, and so on until all have had their turn, after which the original squad of 15 men is called in, and distances judged again up to a distance of 500 yards.

Occasionally the men are made to take their rifles out with them, and to raise the sights and aim at the groups after judging the distance.

When all the men of a squad have been well drilled in this manner, another unknown piece of ground is selected, and the instructor places small groups of men under cover in favourable positions at measured distances from the judging line. The observing squad is then marched up to this line and halted, and at a given signal each group of men opens fire with blank cartridge towards them; the firing will be very slow, so as to give the men plenty of time to judge the distances of each group; as soon as all the men have given their replies, the "cease fire" will sound, and each group will stand up with ordered arms so as to be distinctly seen; after which any man may correct his original replies if he likes. No group will be at a greater distance than 500 yards.

To judge distance by sight up to 1,000 yards.—

For this purpose a full company will be placed at the disposal of the instructor.

When the squad under instruction reaches the ground, the company will march off to 600 yards, then to 800 yards, and then to 1,000 yards, and at each distance it will halt and front, and then go through a few simple movements in line and in column, moving on to the next at a given signal; at each distance the observers will mark well the appearance of the men and of the intervening ground.

After this the squad under instruction will turn about, and the company will move to other previously arranged distances, which will be judged by each man.

After this has been concluded, the officer commanding the regiment will obtain the services of squadrons of cavalry, and a division of field artillery, if they are available, for his men to judge upon.

Then the officers and under officers of the regiment will be called out to judge distances on any other objects, such as buildings, trees, &c., that may be in view at about 1,000 yards off, and all these distances will be accurately measured afterwards.

To judge distance by sound.—

Sound travels nearly 365 yards in a second (333 metres).

Seconds are measured either by a watch or by a pendulum, which is hung so as to swing seconds.

The men are brought up one by one and practised in counting up to ten, in such a manner that the counting occupies exactly three seconds; shots are then fired at known distances, so that the men can still further verify the correctness of their counting; the instructor then sends an armed party to certain previously arranged distances with sealed orders as to moving and firing, and on seeing the flash or smoke from their rifles, the observers will at once commence to count in the manner previously taught to them, and call out their answers directly the report is heard; each unit counted corresponding to ten yards. Each man does this in his turn until the instructor is satisfied that all understand it thoroughly.

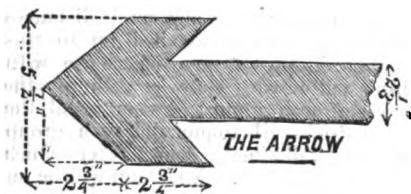
Instruction is imparted each year to every trained soldier in judging distance by paces, and in judging by sight up to 500 yards.

Non-commissioned officers above the rank of corporal will be exercised in judging by sight up to 1,000 yards, and also in judging by sound.

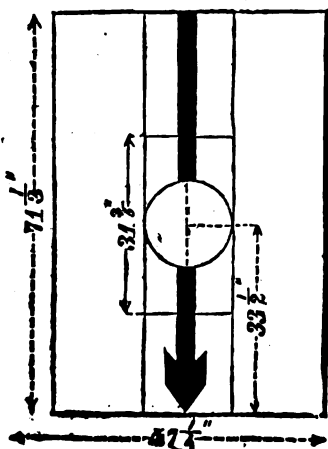
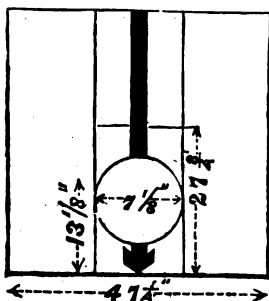
TARGET PRACTICE.

TARGETS AND ACCESSORIES.

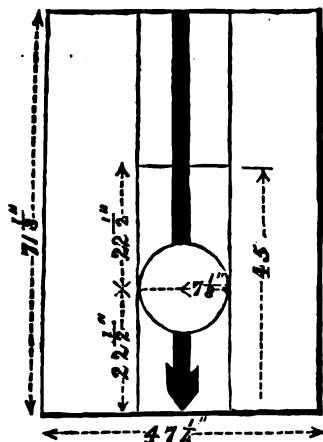
Targets that are used for musketry are as follows:—



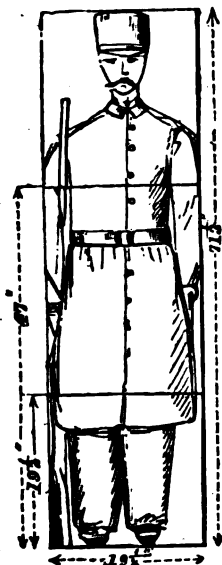
No. 1.—A large sheet of coarse paper glued on to linen or coarse canvas $47\frac{1}{2}$ inches square, divided into three equal vertical strips; the centre strip is covered with white paper and the side ones with brown; the centre strip has a horizontal line drawn across it at $27\frac{1}{2}$ inches from the base, and in the lower portion a circle is described having its centre $13\frac{1}{8}$ inches from the base, and with a radius of $7\frac{1}{8}$ inches; an arrow is then painted in black down the middle of the centre strip, omitting the circle.



Target No. 2 (a) is rectangular, of the same width as No. 1 and $71\frac{1}{2}$ inches high, made exactly like No. 1: on the middle line of the centre strip, with a centre at $33\frac{1}{2}$ inches from the base, a circle is described having a radius of $7\frac{1}{8}$ inches, and two horizontal lines are then drawn across the centre strip at $15\frac{1}{2}$ inches on each side of the centre of the circle, thus forming with the side lines a rectangle having the circle in its centre.



Target No. 2 (b) is made of the same materials, and the same dimensions as No. 2 (a), but the centre of the circle is $22\frac{1}{2}$ inches from the base, and the up line of the rectangle is $22\frac{1}{2}$ above the centre of the circle. The black arrow is painted down the middle of these two targets as in No. 1.



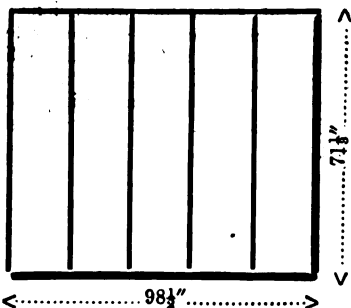
Target No. 3 is made of coarse white paper glued on to canvas, the same height as No. 2 (a) and $19\frac{1}{2}$ inches wide, upon which is represented an infantry soldier standing upright with "ordered arms;" two black lines are then drawn horizontally across it at $19\frac{1}{2}$ and 47 inches respectively from the base.



Target No. 4 is made of the same material as No. 3, 47 inches high, and $19\frac{1}{2}$ inches wide, upon which is represented an infantry soldier firing in the kneeling position.

Target No. 5 is made of the same materials as No. 4, and is $19\frac{1}{2}$ inches square, upon which is represented the head and shoulders of an infantry soldier firing in the lying down position.

No. 6.



Target No. 6 is $71\frac{1}{2}$ inches high and $98\frac{1}{2}$ inches wide, divided vertically into five equal strips, the centre one of which is painted white, the two next red, and the two outer ones brown.

All these targets are stretched on iron or wooden frames, the latter being only used as a makeshift.

The minimum allowances for each battalion is—

4 targets of No. 1	6 of No. 2 (a)	4 of No. 2 (b)
8 " " " 3	8 " " 4	8 " " 5
6 " " " 6	with a proportion of props for keeping them	

standing upright.

Regimental targets are used for field firing in the following manner :—

Infantry extended in line is represented by targets 4 or 5 (according as the men are supposed to be kneeling or lying down) placed at regular intervals.

A line kneeling is represented by targets 1 and 2 placed lengthways or by a number of targets, No. 4, placed in contact with each other. A line lying down is represented by targets 3 and 4, placed lengthways or by a number of targets, No. 5, touching each other.

Infantry standing in line is represented by targets 2, 3 and 6 in contact; if in column as many rows of targets are used as there are supposed to be sections.

A gun in position is represented by target No. 6, with the long side on the ground, and the limber is represented by the same target with the short side on the ground.

Cavalry in line are represented by target No. 6 with the short side on the ground.

For repairing the targets, and covering the holes made by the bullets, the marker is provided with patches of coarse paper of different colours and a pot of paste and a large brush.

All the appliances for judging distance, aiming drill and musketry target practice are in charge of battalions, and the cost of keeping them all in repair is calculated at £8 sterling annually, for each battalion.

Markers.

The markers are posted in a small ditch five feet three inches deep, so made that they can get in or out easily at either end; a seat is provided for them in the ditch.

The targets are placed immediately on the far side of the ditch, standing on a raised platform of earth two feet high.

Just in front of the ditch and at right angles to the line of fire an earthen traverse is constructed, which is 39 inches thick and 18 inches

high, rivetted nearly perpendicular on the side towards the shooting point and having a natural slope on the other.

The ground must be levelled and perfectly cleared of stones to a distance of at least 20 yards from the targets in all directions.

The butt behind the targets is generally from 13 to 19½ feet high.

For field firing and for long range shooting at unknown distances, the most convenient ground in the vicinity of the barracks should be selected; during the time that firing is going on, this ground must be kept by a line of sentries on each side to a distance of 2,000 yards beyond the targets.

SCORING, &c.

Hits on targets one and two are counted as follows :—

3 points if within the circle.

2 " " rectangle outside the circle.

1 " for any other part hit.

Hits on target No. 3—

3 points if on any part of the soldier within the rectangle.

2 " on any other part of the soldier.

1 " for any hits on the target outside the soldier.

Hits on targets 4 and 5—

3 points if on any part of the soldier.

2 " for all on the target outside the soldier.

Hits on target No. 6—

3 points for all on the central strip.

2 " " red strips.

1 " " outer strips.

Ricochets count for nothing; they can generally be recognised by the peculiar shape of the hole made by them in the target.

There are three markers for each target, the senior being always a non-commissioned officer.

The markers signal the points by means of small flags; if raised to the right it signifies one point, if raised to the left it signifies two points, if raised perpendicularly at full arm's length it signifies three points. The markers enter all points signalled by them on their own register, which is afterwards compared with those kept at the firing point.

In slow individual firing the marker signals each hit; but in quick firing he signals the result of every five shots on hearing the "cease fire" sound.

In slow individual firing the target is repaired after the shooting of every two soldiers, but in quick firing it is mended after each man has fired his total number of rounds.

The annual course of musketry is divided into six parts :—

1st.—Preparatory shooting.

2nd.—Ordinary shooting.

3rd.—Special shooting.

4th.—Field firing.

5th.—Instruction shooting.

6th.—Examination shooting.

Preparatory shooting is divided into three lessons, and is performed every year by old soldiers of the 3rd class and by all recruits.

Subaltern officers and men in the 1st and 2nd classes in musketry need only perform the 2nd and 3rd lessons. The ordinary and special shooting are performed each year by all subaltern officers, under-officers, corporals and soldiers, no matter what class they are in. The special shooting may be performed either before or after the field firing.

The field firing is performed by all corporals and soldiers, watched over and directed by the subalterns and under-officers (who do not shoot.)

Instruction shooting is performed by officers and senior under-officers, either before or after the field firing. The examination shooting can take place either before or after the field firing, and is carried out annually under orders from the general officers commanding the Army Corps, if possible before the winter sets in.

The annual course of musketry commences in the spring of the year after the aiming drill is finished. Under-officers fire with their companies, and are always to fire before the men.

Subaltern officers fire separately (not with the men) each course before the men fire.

On the 1st December the course of musketry will be closed, whether all the firing has been completed or not.

The total number of rounds to be fired by each man of the 1st and 2nd classes will be 150 ; but all recruits and 3rd class shots will fire 155 rounds.

RULES TO BE OBSERVED IN FIRING, PARTS 1, 2 AND 3.

All the men must be in full marching order, except during the preparatory shooting, during which the knapsack may be taken off.

Captains will superintend the firing of the men of their companies.

Each man must always have his shooting record book with him.

The companies will be divided into squads of eight men in each, and each squad will be instructed by a non-commissioned officer under the superintendence of a subaltern.

The captain will always keep one trumpeter with him, and will see that one is with the marker also.

The shooting of subalterns will always be directed by a field officer.

As it comes to each man's turn to fire, he will hand his shooting record book to the officer, then step up to the shooting line and fire his five shots in succession in the regular manner ; he will call out the points signalled after each shot, which will be entered in his record book by the subaltern of the company or by some one else on his responsibility, and at the same time the captain will cause them to be entered in the company register. When the five shots are completed, the man takes back his book, picks up the empty cartridge cases and places them in his pouch, and steps back to five paces in rear of the squad.

During the time that a man is firing his five rounds, the instructor is only allowed to correct any very serious faults, but after each man concludes his lesson, all minor faults that he has committed should be pointed out to him.

The 14th lesson of ordinary shooting with accelerated fire is executed as follows :—

The soldier goes up to the firing point, loads his rifle and remains at the ready until the trumpeter has sounded the "commence fire"; he then fires away rapidly but steadily for 40 seconds. When the "cease fire" is sounded and he orders arms, not more than five shots may be fired during that time, and any shot fired after the first note of the "cease fire" is sounded, counts for nothing ; the marker then signals the points obtained which are duly recorded, and the target is then repaired. Should the soldier have his rifle loaded when the "cease fire" sounds, he will unload it.

If owing to any unmistakable defect in the rifle or ammunition, a soldier is unable to fire his five rounds in the 40 seconds allowed to him, he will be ordered to commence a fresh five rounds, and the points scored during the second firing will alone be credited to him.

PREPARATORY SHOOTING.

This course is considered absolutely necessary, in order that a soldier may be able to learn the full value and power of his weapon before passing to the next stage, and every man should try to excel in it.

It consists of three lessons, in each of which five shots are fired.

Lesson.	Distance.	Elevation.	Position.	Target used.
	Yards.			
1	100	200	} Standing upright and using the wooden stepped support.	No. 1
2	100	300		" 1
3	150	300		" 2 (a).

Each man will execute the three lessons on three successive days, weather permitting, and the finest time of the day should be chosen ; and during the whole time the instructors must be most careful in correcting all faults, and in seeing that every man thoroughly understands what he is doing.

During these lessons each man will learn if his rifle possesses any defects or peculiarities, and so he will know how to avoid or correct them when he comes to fire his regular course ; therefore every shot should be aimed at exactly the same spot on the target, unless the instructor specially orders to the contrary.

If it happens that the bullets from any one rifle all strike wide of the mark aimed at, then the instructor will either try the rifle himself or make one of the company marksman try it by firing five rounds at the target from the support or from a table. If the deviation is constant but slight the man is taught how to correct it, and a note is made of it in his shooting book, but if the deviation is serious the rifle is made over to the Armourer for examination and for such action as may be necessary.

When firing from a table, the instructor rests himself on a chair, places two small sand bags on the table at a convenient distance from him, and brings his rifle up to his shoulder resting both elbows on the sand bags.

Ordinary shooting is divided into fourteen lessons, which are carried out as follows, firing five rounds in each lesson :—

Lesson.	Distance.	Elevation.	Position.	No. of Target.	Points required in order to obtain a prize.	REMARKS.
	Yards.					
1	150	200	Standing (with the support) ...	No. 1	13	N.B.—In all firing the aim must be directed at the foot of the target.
2	150	300	Kneeling ...	" 3	13	
3	150	200	Lying down, and using a rest ...	" 5	12	
4	150	300	Standing (without the support) ...	" 2 (a)	12	
5	200	300	Sitting ...	" 2 (a)	11	
6	200	300	Kneeling ...	" 3	11	
7	200	3 0	Standing (with the support) ...	" 3	10	
8	200	300	Lying down (without rest) ...	" 4	10	
9	250	300	Standing (without support) ...	" 2 (b)	9	
10	250	300	Lying down (using a rest) ...	" 2 (b)	9	
11	350	400	Standing (without support) ...	" 6	12	
12	450	500	Kneeling (using a rest) ...	" 6	12	
13	575	600	In any position ...	" 6	9	
14	150	300	Standing (without support) ...	" 2 (a)	11	
			Quick firing (40 seconds), with fixed bayonet ...			

As a rule a man performs only one lesson daily, except there is some very special reason for getting over the shooting quickly, when two lessons may

be performed in one day, but this is never to be exceeded. In any case the men should never be hurried in their shooting, as too much hurry is as bad as long delays.

Any bad cartridges will be at once exchanged, so that each man may fire five rounds in each lesson.

Special firing comprises firing at (1) sliding targets, and (2) at disappearing targets, and is divided into four lessons as follows, each man firing five shots in each lesson :—

Lesson.	Distance.	Elevation.	Position.	Targets.	Points required in order to obtain a prize.	REMARKS.
1	Yards.	200	Standing (without any rest) ...	No. 1	9	At a sliding target.
2	150	200	Lying down (do.) ...	" 5	10	At a disappearing target.
3	200	300	Kneeling (do.) ...	" 2 (a)	9	At a sliding target.
4	200	300	Standing (do.) ...	" 4	10	At a disappearing target.

The sliding target is fixed on a small truck standing behind a wall or bank of earth, and is pulled across the range in front of the butt to another similar covering mound, the distance between these mounds being about 40 feet, and the truck is pulled in such a manner that it shall take five seconds in crossing.

The firer stands with his rifle loaded at the "ready" and must fire one shot at the target each time that it moves across the range.

The disappearing target is fixed on to a suitable iron or wooden frame, and is shot up suddenly by the markers from the regular markers' ditch, remains in sight for five seconds, and then disappears, and the firer must fire one shot each time it appears in sight.

If, however, the soldier is not able to fire his shot at the first appearance of the sliding or disappearing target, he may have one more chance at it, but he will only be allowed ten chances for his five shots, and all shots not fired are scored to him as misses.

The rules given for ordinary shooting apply also to the special shooting, except that after every five shots (ten chances) the marker puts the target up in view again, and counts and signals the points scored, after which it is withdrawn and patched.

The head marker will so regulate the movements of the targets that the five rounds shall occupy about 50 seconds.

If for any reason it is found impossible to carry out firing against sliding targets, then all four lessons will be performed against disappearing targets.

: FIELD FIRING (TIRO DI COMBATTIMENTO.)

These exercises have for their object the good drilling and instruction of officers and men in controlling and delivering fire to the best advantage; they must be carried out progressively, and all the rules regarding shooting and the conduct of fire must be carefully attended to as far as possible, and therefore all the lessons set out in these exercises only represent an elementary drilling in which special care is paid to the shooting; they are eight in number, and the number of rounds to be fired by each man will

be five in each lesson, except in the third lesson in which eight rounds will be fired and in the fifth lesson in which seven will be fired.

First Lesson.—Individual firing (isolated) against a group of four men standing together at a distance of between 150 and 400 yards.

Second Lesson.—Individual firing by men standing in line at open intervals against a squad of 12 men standing one pace apart at a distance of between 150 and 400 yards.

Third Lesson.—Independent firing in mass by squads, with pauses against a squad of 24 men lying down in line at close order, with another squad of similar strength in support kneeling 100 or 150 yards behind them; distance between 300 and 500 yards.

Fourth Lesson.—Volley firing in mass by squads against targets disposed as in the third lesson; distance between 400 and 700 yards.

Fifth Lesson.—Independent volley firing in mass by squads with pauses against targets disposed as in the third lesson; distance between 400 and 700 yards.

Sixth Lesson.—Volley firing in mass by sections against targets representing a column of 200 men standing in column of sections at half distance; distance between 700 and 1,200 yards.

Seventh Lesson.—Volley firing in mass by sections against field guns placed in embrasures 12 yards apart, having the limbers standing in the open from 15 to 20 yards behind them; distance from 1,000 to 1,600 yards.

Eighth Lesson.—Volley firing in mass by half companies against targets representing a company in column of sections closed up, and hidden from view by a natural fold in the ground or by an artificial shelter; distance between 800 and 1,400 yards.

When the targets are hid by a natural fold in the ground two small flags should be planted on the ridge at right angles to the line of fire and at the same distance apart as would be occupied by the front of the column.

GENERAL RULES FOR CONDUCTING FIELD FIRING.

Field firing should be always directed by a field officer, and if possible he should be the Commanding Officer; it will be carried out by battalions which either go to it complete or by separate companies at a time.

The men must be in full marching order. All squads, sections, &c., should always be made up to full war strength; and when, in order to obtain this, it is necessary to take men from other companies, as will always happen in the last two lessons, the captain of the two companies will command by turns.

All the distances will be arranged beforehand by the superintending officer.

Whenever the ground admits of it, the direction of firing will be changed for each lesson.

The distances, written on a card and placed in a sealed envelope, will be given to the officer who is told off to put up the targets, and must not be opened until he arrives on the ground; he then fixes a large flag at the firing point, measures off the distances ordered, places the targets and sentries.

For the first lesson a ditch will be dug in front of the target for the protection of the markers, but for the other lessons they will withdraw to the line of sentries or behind some natural cover. Neither the markers nor the sentries should belong to the battalion firing.

All hits and points will be counted whenever ordered, keeping companies separate. Ricochets count as fair hits.

After counting the hits, the officer on range duty will enter all points in his register, and will then order the targets to be patched; from time

to time he sends up the score to the superintending officer by whom it is communicated to the men.

In lessons 6 and 8 it is obvious that many of the shots that hit the first line of targets will pass through and hit those in rear; so if all were counted the result would be greatly in excess of what would actually occur on service; therefore it is necessary for the officer marking* to calculate what shots hit the targets in rear without passing through those in front, and fill in his register accordingly.

Not more than two lessons should ever be performed in one day.

If for any reasons it is found impossible to complete all the lessons, yet as many must be done as can be.

Alpine regiments will always perform the field firing exercises in the hills.

As soon as a battalion has completed all the exercises, the result will be made out on Form 3 and sent to the commandant of the regiment.

SPECIAL RULES ON CONDUCTING THE FIRING.

1st Lesson.—The company is marched to the ground by its captain and halted 30 paces in rear of the firing point. On the order to "commence firing" the captain orders out the first man of the first squad, who at once steps up to the firing point, selects his own place, judges the distance, raises his back sight and fires his five rounds, after which he retires to some spot pointed out to him, so that he may not be able to communicate with the other men of the company, and so on for all the men in succession.

If it appears desirable, two or more men may fire at separate targets at the same time. As each shot strikes the target, the marker will signal the points scored, but no flag will be raised for a miss.

2nd Lesson.—The captain tells off his company into squads of 10 or 12 men and a non-commissioned officer to each, and halts them at 40 yards from the firing point. On the order to "commence firing," the first squad advances, opening out to two paces between each man and is halted near to the firing line, upon which each man chooses his own convenient position, judges his own distance from the targets, and raises his sight; and at the command to fire given by the commander of the squad each man fires five rounds, after which the squad is closed to one flank, and marched off to some spot pointed out by the captain.

Whilst the first squad is withdrawing, the second squad is marched up and goes through the lesson in a similar manner; and so on for the remainder.

3rd Lesson.—The company having been previously told off into squads as before, is marched up and halted by the captain a short distance in rear of the firing point. At the signal to commence fire the commander of the first squad marches his men off, and brings them up in a close line to the firing point, so that all the men can see the targets; they then with his assistance judge the distance, after which he gives the elevation and orders the number of rounds to be fired. At the word "to commence firing" each man fires slowly the number of rounds ordered, aiming at the foot of the targets, and then remains steady at the "ready" with loaded rifle. After a brief pause to allow the smoke to clear away, the commander orders more rounds to be fired, and so on until the eight rounds for each man are completed. The squad then retires and another takes its place and carries out the firing in a similar manner, and so on until all have fired.

4th Lesson.—The company having been told off into sections and squads (half sections), is marched on to the ground and halted some distance in rear.

* At the end of this paper I will endeavour to explain how this is done.—Fig. 4.—M.J.K.-H.

of the shooting point ; the first section is then extended and brought up by its commander in close order in line and halted on the firing line ; he then judges the distance himself and orders the elevation ; if he is not quite certain of the exact distance he will order a separate elevation for each squad, and as soon as the sights are raised he gives the order to commence firing, upon which each squad fires five volleys at the word of command of its own commander : the section is then marched off, and then takes its place and performs the exercise in a similar manner.

5th Lesson.—The men are brought up in the same manner ; but the section commanders give the order to fire volleys by squads with pauses, independently, so it rests with the squad commanders to fire as many volleys as he pleases with pauses between each set of volleys, so as to allow the smoke to clear away.

6th Lesson.—A half company at full war strength is marched up by its commander (a subaltern officer) in close order and halted by him near to the firing line in the most convenient position ; he then calls out the commander of squads and sections to help him in judging the distance, after which he determines whether all shall fire with the same elevation or if each section shall have a different one, and gives his orders accordingly : as a rule the sections fire with different elevations in *all* cases when the distance is not accurately known. The "commence fire" is sounded, and each section fires five volleys by command of its own leader.

7th Lesson.—In this lesson a whole company is made up to full war strength, and marched up by one of the captains who himself judges the distance, and orders the particular elevation for each section. Section commanders see that all their men adjust their sights correctly, and on the trumpet sounding to commence fire, give their orders in such a manner that the five volleys are fired in rapid succession.

8th Lesson.—The company is made up as in the preceding lesson, and on arriving at the firing line, the superintending officer points out the two flags and tells the captain how far in rear of them the targets have been placed ; the distance is then judged, the different elevations ordered, and the men are directed to aim at the top of the ridge between the flags. As soon as all are ready, the trumpet sounds, and firing is carried out as in Lesson 7.

CLASSIFICATION OF SHOOTERS.

The individual firing being over, each captain, assisted by his subalterns will classify his men, dividing them into three classes, and numbering each man in his proper class.

For this purpose the total number of points gained in each of the 14 lessons of preparatory, and in the four lessons of special shooting by each man of the company, are added up on the register, Form 2, and those who have scored 140 points or more are entered in the 1st class ; between 100 and 140 points puts a man into the 2nd class ; and all who have scored less than 100 belong to the 3rd class.

When two men score the same number of points, then the one who has most hits to his credit is put first, but if both make the same number of points and hits, then the junior in point of service is put first. A man who is unable to complete his firing is not classed, but will remain in his class of the previous year, except in the case of a man who in the number of rounds fired has scored a sufficient number of points to bring him into the 1st class.

The results of the shooting will be recorded in the soldier's own shooting book, and also in the company register.

Officers are not classified.

All men obtaining 170 points or more are declared to be marksmen, and obtain regular certificates and badges to be worn on the sleeve.

When once a man is declared to be a marksman he retains the distinction as long as he remains with the colours, and keeps in the first class, but he loses it if in any subsequent year he shoots so badly as to get into a lower class.

EXAMINATION SHOOTING.

This is a competition between all the companies of a regiment, and is a means of ascertaining the relative shooting qualities of each regiment.

The commandant of the army corps fixes every year the shootings that are to be performed by each company, taking care that they are the same for all the troops under his command.

Each company must, if possible, carry out all its examination shooting on the same day and on the same ground, and no officer or man may be absent on any account whatever.

During the time that a company is firing two subaltern officers will assist in the marker's ditch, one belonging to the company that is firing and the other from some other company. Whenever firing is stopped in order to repair the targets, the points will be counted in the presence of the officers and men of the company.

As soon as the firing is concluded, the captain will make out his report and send it on the same day to the commanding officer of the regiments who then compiles a return shewing the shooting of each company and sends it to the commandant of the army corps through the regular channels.

Besides this shooting, the army corps commandant may, if he thinks fit, order competition firing between companies of different regiments.

PRIZES.

Money prizes and honorable badges are granted for good shooting.

The money prizes are of three kinds :—

1st.—Ordinary and special lesson prizes.

2nd.—Marksmen's prizes.

3rd.—Examination shooting prizes.

All corporals and privates who make a score in *each* lesson that entitles them to prizes, will receive a prize of 40 centimes.

No lesson prizes are awarded to under-officers, and these prizes are to be paid to the men on the same day on which the firing takes place.

A prize of 15 francs is given to each marksman. The examination prize is given to the company that makes the highest score or the greatest percentage of hits in each regiment.

Each private soldier receives 50 centimes.

Each corporal 1 franc.

Each under-officer 3 francs.

And the prize company is mentioned in the orders of the day.

All prizes, badges, and certificates (except the lesson prizes) are distributed by the officer commanding on parade before the whole regiment.

INSTRUCTION SHOOTING.

The object of instruction shooting is to demonstrate practically to the officers and non-commissioned officers, first, the ballistic properties of the rifle, and second the efficacy of firing in mass, in order that they may understand how to direct the firing of their men.

For the first lesson picked shots are selected, who fire seated in a chair with the elbows resting on a table.

First of all 30 shots are fired with an elevation for 200 yards, ten of which are at a target 50 yards off, ten at 100 yards and ten at 150 yards. Then with an elevation for 300 yards ten shots are fired at a target

placed successively at distances of 50, 100, 150, 200, and 250 yards. Then with an elevation for 400 yards 60 more shots are fired, ten at each range, at targets placed successively at distances of 100, 150, 200, 250, 300 and 350 yards off. For distances up to 300 yards, targets 1 and 2 will be used, omitting the circles and rectangles; and for distances beyond that range, target No. 6 will be used placed with the short end on the ground and having a black arrow painted down the centre. In all cases the aim will be directed at the point of the arrow touching the ground.

If the shooting has been good, the majority of the shots will be on the arrow at heights above the ground closely approximating to the ordinates published in the Appendix.

The results, and the reasons for them and the objects in learning them, and also the laws of trajectory, will be then carefully explained to all by the superintending officer.

After this will be demonstrated the efficacy of firing in mass at ranges up to 800 and 1,000 yards.

For this purpose squads of 20 individuals in each are made up, and three rows of targets are fixed one behind the other at ten paces interval; firing commences with an elevation of 700 yards, and 100 shots are fired successively at distances of 600, 630, 660, 690, 720 and 750 yards from the first row of targets, and in this manner the terms of the series are obtained three at a time; the results obtained are then compared with the calculated tables given in the appendix of the regulations.

The volleys are fired kneeling, and aim is taken at the foot of the second row of targets, and so in like manner are obtained the other series. (*Note by the Translator.*—But this is a long and somewhat complicated subject to explain, and moreover the study of "fire tactics" has quite recently been very ably worked out by Major C. K. Brooke in a paper contributed by him to the Journal of the Royal United Service Institution, Vol. XXVII, No. CXXII of 1893, to which I would refer all who are interested in the subject and who wish to learn all about it, as it thoroughly explains the manner in which this important matter is dealt with in the German and Italian armies.—M. J. K.-H.)

CHAPTER II OF THE APPENDIX.

SPECIAL RULES AND ADVICE.

When the distance is accurately known the centre of the target may be aimed at, but as on service it is almost impossible to judge the distance accurately, and the objects are always moving, it should be a fixed rule *always to aim at the foot of the target*, such a course being advantageous on the following grounds:

- (1.) The junction of the target or object with the ground is always distinctly seen, but it is not always easy to make out the centre.
- (2.) In actual combat an adversary is often hidden by the smoke, so the central point cannot be seen, but it is always easy to see the junction of the smoke with the ground.
- (3.) By aiming at the centre many of the bullets always pass over the object fired at.
- (4.) By aiming low at an advancing enemy, the ground over which he has to pass is much better covered than if the aim was taken at the centre of the body, and hits by ricochets are also more numerous.

Therefore it is an invariable rule that at target practice the aim shall be taken at the foot of the target.

For a single individual who is a good shot, the limits for shooting should be 200 yards against single men in any position ; 300 yards against two or more men kneeling together ; 400 yards against groups standing or on horseback.

When, however, the distances are exactly known, which is very exceptional on service, the limits of 300 and 400 yards may be extended to 400 and 600.

Firing in mass is always preferable to individual firing.

From actual experiments it has been proved that up to a distance of 700 yards a company in column suffers very little more than in line ; but at greater distances the column suffers much more, even twice or thrice as much as a line. The following form is sufficient in practice to estimate the efficacy of shooting in mass, and to calculate approximately the number of cartridges necessary to obtain a given effect against the target or object :—

Elevation.	Number of Shots.	Length of beaten zone, against infantry standing.	Hits.	
			At end of zone.	At centre of zone.
Yards.				
400	100	From muzzle up to 450 yards ...	15	57
500	100	From 250 or 300 up to 550 yards ...	15	44
600	100	From 250 up to 650 yards ...	10	38
700	100	From 450 up to 750 yards ...	10	28
800	100	From 550 up to 850 yards ...	10	23
900	100	From 750 up to 950 yards ...	10	18
1,000	150	From 850 up to 1,050 yards ...	10	25

To obtain this result against men kneeling or lying down, a much greater number of shots is required, varying $1\frac{1}{2}$ to 4 times as many.

When firing at unknown distances it is generally impossible to avoid mistakes caused by the condition of the atmosphere, the irregularities of the ground, &c. So when the distance has been judged as nearly as possible, it is always advisable to have the firing carried on at different elevations, so as to eliminate as far as is possible the unavoidable errors.

In the conduct of firing great stress is laid on implicit obedience on the part of the firer to the orders of his commander, who on his part must be most vigilant to detect and correct all irregularities and to use his utmost intelligence so as to obtain the best results.

Men should never fire unless the object is distinctly seen, or the situation certainly known. Therefore the practice of field firing is considered of the utmost importance to all ranks.

FORM No. 1.

5TH REGIMENT OF INFANTRY.

10th Company.

3rd Battalion.

TARGET SHOOTING BOOK

OF

Private J—— B——

No. of Rifle, 1793.

Letter A.

Year of shooting.

Classification of previous year

Class Number in Class

Class in current year

Number in Class

Date of Shooting.	Lesson.	Distance.	Elevation.	Target.	POINTS OBTAINED AT EACH ROUND.				TOTAL.		Points required to obtain a prize.	Prize obtained.	REMARKS.
									Points.	Targets (hits)			
Preparatory Shooting.	1st										..		NOTE.—On another page of the book are entered any remarks that are considered worth recording, such as any peculiarities of the rifle or sights; pull-off of trigger; if the bayonet came off during quick firing; any misfires or other accident; any peculiarity of weather, wind or light. M. J. K-H.
	2nd										..		
	3rd										..		
TOTAL FOR PREPARATORY SHOOTING											...		
Ordinary Shooting.	1st										13		
	2nd										13		
	3rd										13		
	4th										13		
	5th										11		
	6th										11		
	7th										10		
	8th										10		
	9th										9		
	10th										9		
	11th										12		
	12th										12		
	13th										9		
14th										11			
TOTAL FOR ORDINARY SHOOTING											...		

FORM NO. 1.—(Continued.)

Date of Shooting.	Lesson.	Distance.	Elevation.	Target.	POINTS OBTAINED AT EACH ROUND.					TOTAL.		Points required to obtain a prize.	Prize obtained.	REMARKS.	
										Points.	Targets (hits.)				
Special Shooting.	1st											9			
	2nd											10			
	3rd											9			
	4th											10			
TOTAL FOR SPECIAL SHOOTING												...			
GRAND TOTAL OF POINTS												...			

Has he completed field firing ?

Has he performed examination shooting ?

Is he a marksman ?

(Sd.)

CAPTAIN,

Place

Commanding, 10th Company.

Date

FORM NO. 2.

5TH REGIMENT OF INFANTRY.

10th Company.

TARGET PRACTICE REGISTER

For the Year

18 .

This is exactly similar to Form 1, one page being given to each non-commissioned officer and private in the company.

FORM NO. 3.

REGISTER OF FIELD FIRING.

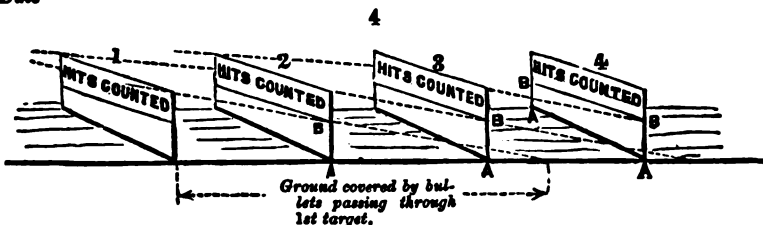
5th Regiment.

Year.

3rd Battalion.

Lesson.	Description of Fire.	Dis- TANCE.		Elevation.	Target.	Number of men exercised.	SHOTS.		REMARKS.
		True.	Estimated.				Fired.	Bits.	
1st	Individual isolated ...				A group of 4 men stand- ing together.				
2nd	Individual in ex- tended line.				A squad of 12 men standing in line at in- tervals of one pace.				
3rd	Mass firing with squad pauses.				Two squads of 24 men ; one lying down in line extended ; the other kneeling 150 yards behind first line.				
4th	Mass firing by squad volleys.				As above.				
5th	Mass firing with squad pauses.				As above.				
6th	Mass firing by sec- tion volleys.				A company of 200 men in column of sections standing at half dis- tance.				
7th	Mass firing by sec- tion volleys.				Six guns in embrasures at 12 paces interval with limber 15 paces behind them.				
8th	Mass firing by half company volleys.				A company of 200 men in column of section.				Targets covered by rising ground.

(Sd.)

LT.-COLONEL,
Commanding, 3rd Battalion.Place
Date

To determine the height of A B which is the portion of the rear targets on which hits are not counted—

$$H : S :: X : S - A$$

in which H is the height of the target, S is the space covered by the bullet in its flight after passing over the top of the first target as calculated in the tables mathematically ; X is the height A B required. A is the distance between the targets representing the fractions of the column.

When the officer on range duty places the targets, he calculates from the printed tables the height of A B and then on each target, except the 1st one; he draws a line at that height parallel to the ground, and all hits above that line are counted.

The Italian Musketry Regulations contain a set of carefully worked tables which shew dimensions of shot groups; ordinates in metres of the Vetterli rifle at intervals of 50 metres under various conditions; series obtained with one or more sights, &c., which are all of the greatest value to any one who wishes to thoroughly understand the theory of musketry.

P.S.—At Rome I saw a most excellent system of barrack instruction in musketry, which promises to be most successful; the men like it very much, especially the bad shots, who thus get coached up by their comrades. A certain number of cartridges containing small charges of powder and a wooden pellet are issued to each company, and are accounted for by the captain. The target is placed at a fixed distance, and the firing may take place either in the barrack room or outside in the square.—M. J. KING-HARMAN.

EXTRACTS.

Artificial Foods for Horses and Cattle in India.

The latest number of the *Quarterly Journal of Veterinary Science in India and Army Animal Management* contains a long and interesting editorial "On the Food and Feeding of Animals of the Army, Trade, and Agriculture in India." From this exhaustive treatise the following is a verbatim extract:—

We must now consider certain artificial foods which have been suggested and tried for use in this country. These are seen under the form of compressed foods, feeding cakes, and horse biscuits. A distinction must here be drawn between those which really contain much nutritive matter and those which are all spices and other stimulants, and are useless unless given with large quantities of ordinary feeding materials. Thorley's food for cattle is one example of the latter; it is only what is known in India as a masalih and has simply the ordinary value of a stimulant. The compressed food, which has recently been experimented with by Government, consists largely of oats and beans, crushed and in a favourable condition for digestion. It promises to be useful on service as being highly nutritious, and in itself sufficient for horses for a short time, and supplemented by supplies obtained at the seat of operations it might prove even sufficient for a long campaign; but it has two drawbacks. Firstly, it does not contain sufficient bulk for a horse; animals fed on it, therefore, lose weight and become tucked up; secondly, it does not contain enough aromatics or other tempting substances. Accordingly we find, that in this country horses used to chenna or coolthees obstinately refuse it for some time, unless some such palatable substance as jaggery be mixed with it. The mistake has been made of trying these substances on service which Offg. I. V. S. Poyser rightly has pointed out as being decidedly unsatisfactory, and liable to interfere with the efficiency of animals experimented on. The compressed food invented by Veterinary Surgeon J. H. Cox fulfils somewhat similar requirements; it does not seem to have been generally adopted, but is worthy of further trial. Horse biscuits are extremely compressed foods available for cavalry under active operations on account of their high nutritive value and digestibility and their being made in a portable form so that several days' rations can be strung on a cord and hung to the saddle. The Russians, especially, have found these biscuits very useful for their irregular cavalry, traversing rapidly the plains of Central Asia, or making raids in European and Asiatic Turkey.* We have on more than one occasion considered it advisable to allude to feeding biscuits, because in several recent wars they have been used for cavalry and with decided benefit. In the preparation of such articles of diet, flesh has been used satisfactorily; it having been proved by French Veterinarians during the siege of Paris, that troop horses may, when fodder is very scarce, be kept in a state of efficiency by animal food. It will be remembered that we recently wrote of the effects of a blood diet on Herbivora as investigated by M. Reynard, showing that lambs fed on dried blood, after a special method of preparation, grew remarkably, and produced very good wool.

It is found that in the course of time horses become used to flesh diet and ingest it freely. There are apt to be conditions on service (as during the siege of Lucknow) when the carcasses of Commissariat animals cannot

* These cakes are made by machinery at St. Petersburg. They consist of ground oats and pea meal mixed with hemp seed oil and some salt. They are baked as thin biscuits 4 inches in diameter and perforated in numerous places to facilitate soaking. These can be given, and are relished either soaked or dry and are said to keep horses in good working condition—(*Veterinary Journal*, 1877, Vol. II.)

be got rid of, but cause pestilence by their decomposition, while the horses are succumbing for want of nourishment. On such an emergency, the example of the French may be freely followed. The Arabs and Baloochees ordinarily feed their horses on boiled sheep's head.* *Australian wheat in chaff* was recently experimented with at Poona, and its nutritive value found to be great. But, it is to be hoped, we shall not have to send to Australia for food, as we have been compelled to for horses.

Generally the residue after expression of oil for various economic purposes, is utilized as a *feeding cake* for cattle in the districts; it is often highly nutritious food for horses as well as cattle; generally throughout India the Jingili seed residue, procured after the expression of country sweet oil, is procurable at a cheap rate; we have no exact experiments as to its feeding value for horses; cattle eat it freely, thrive on it, and it is said to be especially valuable for milch cows: horses, as a rule, like the cake, and eat it readily. In some localities the ground nut oil is principally used, and its cake (Vayrcuddalay, *Tamil*) has been tried in horse feeding. Veterinary Surgeon (1st Class) Symonds, after some careful investigations decided that it is useful as a flesh forming diet; other enquirers have, however, considered it liable to cause indigestion. *Poonacs*, as account cake is called by Tamil-speaking people, *Potoo* (the shell of the pigeon pea or tour dall) and *Tour* (rice bran) are mentioned by Dr. Shortt as in common use in the Madras Presidency as food for milch cattle; possibly in emergency one would find them useful for horses.

Early Days of the Egyptian Army.

The current number of the Journal of the Military Service Institution of the United States contains the report of a lecture on Military Affairs in Egypt by Lieutenant-General Charles P. Stone, late Pasha and Chief of the Egyptian General Staff. The following extract giving some particulars regarding the Egyptian Army in the days when Memphis, Thebes, and Bubastes were at their prime, will be read with interest in connection with Colonel F. H. Tyrrell's article on Army Organization among Oriental Nations, which appears on another page of this Journal.

"The apparently flimsy, but well preserved papyrus, and the grand old monuments in enduring stone and bronze still existing, give us accounts not only of the organization, but also of the exploits of the ancient Egyptian Army; and from those clear records we know that not only during the reigns of Sesostris and his father, but under far more ancient kings than they, the regular army of the country was composed of the fighting arms of service, with the proper staff-corps, engineers, quartermasters, and provost troops."

"We have also details of battles and combats won by that army, and even the orders issued by those ancient Pharaohs detailing the composition of expedition sent forth for various purposes, and fixing with all the precision of an adjutant-general's order of the present day, the due proportions of infantry and war-chariots, with the regulation number of staff officers, engineers and police troops. The Bureau of Military Justice and the agreeable Pay Department were never missing.

In justice to our much-abused Quartermaster's Department of the present day, I feel bound to state here that even in the time of *Setsi* 1st, fourteen and a half centuries before the commencement of the Christian era, the soldiers of his grand old battalions were subject to details for daily duty in the

* Dunkelberg of Poppelsdorf found that South American meat meal baked with leaven in the form of a coarse bread together with bruised oats, and a small proportion of meat salts to compensate for loss in preparation, constituted a nutritive, portable, and not fattening food—(*Veterinary Journal*, 1880, Vol. I, p. 370).

Quartermaster's Department, for making roads and building quarters. In those days, too, the regular army had good hard frontier duty to perform, far away from the capital and the comforts of the great cities.

A battalion of the old Egyptian Infantry must have been a noteworthy sight. It was composed, as nearly as I have been able to learn, of one hundred companies of one hundred men each.

Each company had a captain, a lieutenant, ten corporals, and ninety privates.

The title of the captain was "chief of a hundred," and to-day, in Egypt and Turkey, the captain of a company is called Usebashi, which means "head of a hundred."

In those old days a corporal was called a "chief of ten," and to-day in Egypt the corporal is called Umbashi, which means "chief of ten."

In the battalion of 10,000 men each ten companies had their "chief of a thousand," and to-day in Egypt, a major, whether he commands ten or eight companies, is called a Bimbashi, which means "chief of a thousand."

The formation of the battalion for combat was as follows:—

The 100 captains formed the front rank of the battalion, and each captain had his 100 men in file behind him, a corporal at the head of each nine men. The chief of each 1,000 men was in front of the centre of his two companies, while the colonel commanding the grand battalion was in front of its centre.

The leaders were not mounted on horseback, but were mounted in two-wheeled chariots, drawn, usually, by two horses. In the chariots were carried a supply of javelins and arrows for the use of the chief, who, usually, had in the chariot with him a soldier, who held a buckler to cover him from the arrows of the enemy, while he dealt about him with his bow and spears.

In the early days, and down to the time of Sesostris, the officers and non-commissioned officers carried bucklers and swords, while the private soldiers of infantry carried each a buckler and a battle-axe; sometimes the battle-axe was accompanied by, and sometimes replaced by, a spear.

It is easy to see that Moses drew from the military organization of Egypt that which he adopted for the Israelites, and later on the Greeks their formations. Both these nations took their first lessons in civilization and organization from Egypt.

In the earliest monuments and records of the Egyptian Army, there is no sign of the existence of the horse as a military animal, while in the monuments of the 18th dynasty, the war-horse is everywhere indicated. It is probable that the war-horse was first introduced by the Shepherd Kings, who came in from Syria about 4,100 years ago. It is certain that the horse formed an important agent in the military establishment of Egypt under the legitimate kings of the country, 1,700 years before the Christian era, and the lack of monuments erected during the 500 years of struggle between the Shepherd Kings and the Thebans explains easily the lack of record on this subject. Sesostris had at one time 20,000 war chariots in line, drawn by horses.

Cavalry, as we understand it, where the warrior mounted and rode his horse, was, in that army, not introduced until a late period. The chariot and its director in those old days played more or less the part of both artillery and cavalry.

About 2,550 years ago Egypt, after having in the past given lessons in civilization and organization to all the countries bordering on the Mediterranean, saw herself excelled in military tactics and energy by the Greeks; and the Pharaoh of the time, hard-pressed by his enemies, took for his army Greek instructors, and for his navy Greek constructors, who in a short time made him, with his immense resources, again master of the situation in North Eastern Africa.

This importation from Greece of instructors for the Egyptian Army is the first of which I have been able to find a record. But from that time to the present, one importation has followed another, sometimes from one country, sometimes from another, down to the present time."

Russian Maps.

Russia is famous for her zeal in making maps. As England is too well aware, her topographers are always pushing ahead and mapping Central Asia, while Germany and Austria are constantly arresting secret agents in the act of taking plans of the frontier defences. But although the Russian Topographical Department has reached a degree of excellence which deserves better attention from our military authorities, the Minister of War is not satisfied with it, and during the next few weeks the entire staff, together with its printing establishment, will undergo a complete reorganisation, so as to enable it to nearly double the present production. What that production is may be gathered from a few statistics. On an average the Topographical Department turns out 200 new maps a year, and strikes off in the aggregate from them 100,000 copies. Some of the maps are only small ones, but not a few are of a character which might be fitly termed gigantic. Of such a character may be described the great ten-verst map of European Russia, completed a short time ago, which consisted of 154 sheets, and took eighteen years to produce. The number of copies printed of such maps is of course limited, but the plates are always kept in readiness for striking off large numbers at a moment's notice. During the Russo-Turkish War, for instance, the department printed 200,000 maps of Turkey in Europe for distribution to the army, and at the present moment there are probably a quarter of a million of similar maps lying in store in the depôts of those of the southern forces which would be the first to cross the Danube again. With but few exceptions, all the maps printed by the Russian Government, however recent or secret the information they may embody, are offered for sale to the public at a mere trifle. This feature is to be maintained under the new reorganisation, and largely extended, so as to enable the department to furnish maps for any books brought out by the publishers of Russia.—*R. E. Journal.*

REVIEW.

NORDENFELT ON MACHINE GUNS.

A recent publication by Mr. Thorsten Nordenfelt, the perfecter of the Palmcrantz system of machine guns, has lately given a very complete account of these guns as they stand at present.

The book has come before the world at an opportune moment, as of late years some attention has been given to the subject, and a trial has, to a certain extent, been accorded them in our recent campaigns in Egypt.

Machine guns are of various kinds, but they may, for practical purposes, be divided into two classes, *viz.*, those of rifle-calibre, which are adapted for service on land; and those of larger bore, which are more especially designed for naval service.

The different systems of the present day are thus alluded to by Mr. Nordenfelt:—

“The systems of machine guns of the present day that have passed successfully through the severe tests of numerous competitive Government trials in Europe, and therefore deserve special consideration, are the ‘Hotchkiss,’ ‘Gardner’ and ‘Nordenfelt’ systems. There may be other machine guns in an embryo state which the inventors may claim as superior to those inventions, but the above-mentioned are certainly the best existent that have been, and are still being, publicly tried.

“The ‘Hotchkiss’ invention is taken as representing the system *first* adapted to rapid firing *shell* guns; its mode of construction does not allow of the manufacture of small-bore machine guns.

“The ‘Gardner’ invention represents more especially *rifle-calibre* machine guns of *one* or *two* barrels.

“The ‘Nordenfelt’ system is adaptable to *rifle-calibre* machine guns with any number of barrels, firing any kind of cartridges, &c., and is also adaptable to *shell* guns. It thus allows of a navy having its machine gun armament composed of one and the same system; similarly an army could use the same system for its equipment of field, fortress and siege machine guns—advantages which should not be overlooked.”

The value of machine guns, both of rifle-calibre and of a heavier description, for use against torpedo boats, has long been recognised, and the guns on the Nordenfelt system are now a regular part of the armament of British men-of-war.

The rifle-calibre gun, which carries the rifle ammunition of the day, would seem to offer many advantages for land service, but as yet little or no progress has been made towards its adoption. This may be due to the difficulty of settling to which branch of the army it should be attached or combined with, or to the idea which seems to exist, that such guns are intended to replace artillery.

Such can never be the case, and the true principle of their employment seems to be to treat them *as supplementary weapons*, for affording to either artillery, cavalry or infantry, a defence by means of a powerful rifle fire, which otherwise they are not possessed of.

Whatever may be the future before rifle-calibre machine guns as a military weapon for field service, there is a general consensus of opinion as to their value as weapons of defence.

This will be exemplified by the following quotation from Mr. Nordenfelt's book: "The object of the employment of rapid-firing machine guns of rifle-calibre, for service in the field, or on boardship, is to economise labour and men, and to enable a very rapid and continuous fire of bullets being maintained for short periods of time, at the important moments of attack or assault, with the minimum possibility of the cessation of such fire.

"For instance, *one* Nordenfelt ten-barrelled gun would, in half a minute, discharge 500 bullets on an advancing force or storming party at short range, under the manipulation of *only two* men, who would be amply protected, while the same power of fire could only be achieved by a body of some *fifty* men armed with one of the best rifles to be obtained."

Mr. Nordenfelt's book is by far the most comprehensive study of the question which has yet appeared. It will well repay careful attention.

The book is well got up and illustrated by 53 plates showing all descriptions of Nordenfelt guns, their mountings and carriages.

The latter differ much according to the work proposed for the gun, they are naturally very important. It is sufficient here to say that they seem well adapted for the various purposes for which they are designed, and that the whole subject has been carefully thought out.

The book is divided into four parts: Part. I, consisting of 5 chapters, is devoted to a description of the Nordenfelt guns, carriages and mountings, ammunition, &c.

Part II compares the "Nordenfelt" and "Hotchkiss" systems and the "Nordenfelt" and "Gardner" systems.

Mr. Nordenfelt is, of course, anxious to claim superiority for his own weapon, and it certainly seems, from the figures and tables of result of recent trials, that he has a right to do so. This, however, is no question for discussion here; we are concerned with the adoption into the service of the best gun, whoever may be the inventor, and no doubt a fair trial will be given to all competitors.

Part III considers the employment of machine guns for naval purposes.

Part IV, which comprises eight chapters, discusses in much detail the various ways in which machine guns might be employed for military purposes, both for attack and defence, both in the field and in fortifications.

The Nordenfelt rifle-calibre machine guns may be divided into two classes, *viz*, heavy and light; the former 12-barrel, 10-barrel, and 7-barrel, the latter 5-barrel and 3-barrel.

Of the heavy guns the 10-barrelled would seem to be the most generally useful of its kind; its weight is 232lbs.; when used in the field it would be mounted on a carriage, with limber attached, drawn by two horses.

Of the light guns the 5-barrel and 3-barrel, which can be drawn by one horse, carried on mule back or slung on poles by men. These last would seem specially adapted for mountain warfare.

For use of these guns for general purposes in the field there might be some difficulty in keeping up an adequate supply of ammunition and the advantage of having them as an auxiliary arm might be neutralized by the necessity of having to carry a large number of rounds.

This argument, however, does not apply to their use in stationary defensive positions.

Nordenfelt recognises the possible difficulty as regards ammunition, and refers to it as follows :—

“One of the greatest obstacles placed in the way of their adoption for field service is due to the difficulty which it is declared must exist in adequately supplying these weapons with ammunition on the field of battle.

“Though the Nordenfelt 10, 5 and 3-barrelled guns can fire respectively 1,000, 600 and 400 shots in one minute, yet these figures must not be taken as representing the rate of discharge which would be generally adopted, but only as showing the extreme power of the weapon.

“On actual service it is inconceivable that the extreme rate of fire would be reverted to for more than a *few* seconds at a time, and for some special object, such as the last rush of an assaulting party, when the greatest torrent of bullets capable of being poured forth from such a gun will be the best proof of its effectiveness.”

Mr. Nordenfelt devotes a chapter to the consideration of this question of the supply of ammunition; most of his suggestions are practical and deserve careful attention.

It must be borne in mind that the ammunition for the rifles of the army and the rifle-calibre machine guns is interchangeable, and that there is no question of proposing a gun which carries special ammunition. One of the main causes of the failure of the “Mitrailleuse” in the Franco-Prussian War of 1870-71 was that it required a special kind of ammunition.

There is much that is worth careful reading in the military portion of Mr. Nordenfelt's book; he goes fully into all questions as to the way in which they might be employed in the field. As an enthusiast on the subject, he may be thought to take too high a view of their possible value; all that he says, however, is thoroughly thought out and should be well weighed. A study of the book only can suffice for this. The principle of the employment of these guns in the field has already been approved by high authority, for General Lord Wolseley, speaking at the Royal United Service Institution in May 1888, said: “I quite agree as to the value of the machine gun in the field. I believe there is an enormous future for it, for the very reason that it will increase the effect and will aid the power of long range infantry volley-firing. The machine gun will take the place of considerable bodies of men, and when supplied with plenty of ammunition, *which it is the duty of those who have charge of an army to provide*, I believe there is a very great future for the machine gun, and that that general or that nation which knows how to develop and make use of it will, in the future, have a very great opportunity—an opportunity that has never been made use of by any one before.”

This is strong language. May it be our endeavour to fulfil the prophecy

by using these guns to the full, at least for defensive purposes in India ; thus in some way endeavouring to compensate for deficiency of reliable men. Whatever may be the divergence of opinion as to the use of the rifle-calibre machine gun for field service, there can be none as to its suitability for use under circumstances where it would remain comparatively stationary. We then get rid, to a great extent, of the ammunition difficulty, because ordinary foresight should enable a sufficient supply of ammunition to be collected beforehand.

On lines of communication, such as the Khyber in 1879-80, one or two 5-barrelled guns in each post would give much increased strength to the garrison. In speaking of their value against uncivilized troops, Mr. Nordenfelt says the following :—

“It is also invariably the case in carrying out a war against uncivilized troops in the enemy’s country that as each stage of the advance is effected, depôts have to be formed for the storage of provisions and for other purposes, and which, though not requiring a large number of men to hold them, yet must necessarily weaken considerably the strength of the invading army, which, compared with the far more numerous troops of the enemy, is usually very weak in numbers.

“By employing some Nordenfelt 5-barrelled rifle-calibre machine guns for the defence of these depôts, not only would they afford greater strength to these positions against surprises of the enemy, but they would also be of important use in reducing the number of men who must otherwise be taken from the active force for the purpose of providing a defence for these depôts, and who would thus, as it were, be rendered inactive.”

The following appear to be some of the uses for which these guns are specially adapted as regards India : For the defence of Frontier forts and outposts, permanent forts, lines of communication, railway stations, armoured trains for patrolling railways in time of war or local disturbances, defence of bridges (now completely neglected throughout the length and breadth of India), fortified posts in all military centres in which women and children and sick can be left in comparative safety whilst the troops take the field.

At the conclusion of some very sound remarks on the subject of fortified posts, Mr. Nordenfelt says : “By supplying each of these stations with a couple or more of Nordenfelt 10-barrelled guns, with an ample supply of ammunition, a remedy would thus be obtained for the want in numbers of the garrison of such places of refuge.

“These weapons, by their rapidity of fire and discharge of volleys, which can be automatically spread, would be each equal in rifle power to at least 100 men; and they require but *three* men to work them, are very simple, and can be easily rendered useless to the enemy in the event of their being captured.

“If all the volunteers in India were trained in the use of these weapons, there would be no difficulty in finding a few men in each out-station who, on an emergency, would be able to work them.”

A perusal of the book will repay those interested in military matters generally, and especially in questions connected with our position in India, on which it is not necessary to enlarge here.—(A. G.)

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H. E. THE VICEROY in the Chair.

EMPLOYMENT OF SOLDIERS IN CIVIL LIFE AFTER THE PERFORMANCE OF MERITORIOUS MILITARY SERVICE.

By Colonel E. F. CHAPMAN, R.A., C.B., A.D.C.

YOUR EXCELLENCIES, LADIES AND GENTLEMEN,—In asking your interest and sympathy in the movement which is now on foot to further the employment of Reserve soldiers in civil life, I am anxious to claim the privilege of the position I am now holding, and to assure you that all that I shall venture to say on the present occasion I say on the part of His Excellency the Commander-in-Chief. The subject on which I am about to address you is divided into three parts: home service, foreign service, and the employment of soldiers of the Native Army after service. Before detailing the scheme which has been initiated by means of regimental action, I am anxious to meet two objections that have been raised by some of my friends in the Army. *First*, it has been asked, why should we undertake to do that which it is the interest of the Government to carry out? And, *secondly*, why should proposals regarding the employment of Reserve soldiers in England be suggested from India? With regard to the first objection, which appears to be a real difficulty to many of my brother officers, perhaps I may be allowed to read certain extracts from the Report of the Select Committee of the House of Commons made in 1877. The Committee was appointed to inquire how far it was practicable that soldiers, sailors, and marines, who had meritoriously served their country, should be employed in such civil departments of the public service as they might be found fitted for. The extracts to which I refer are as follow:—

“The subject referred to your Committee involves two questions: one, whether a better class of men would be induced to enter the military or naval service if the prospect were held out to them of civil employment after a certain period of meritorious service? The other, what would be the effect on the civil service of the introduction into it in a greater

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"degree than hitherto of persons who have served in the army or navy ?
"On many grounds the first question will appear to be of much importance at the present time. The country has willingly consented to make great efforts in order to secure, under a system of short service (followed by service in the Reserve) and in other ways, good recruits in sufficient numbers. With similar objects the great military nations of the Continent have made extensive reforms in their army organisation ; and one of the most prominent of these, recently effected in France and Germany, is that which practically makes the army the avenue to civil employment.

"It is true that the policy of these great nations in matters of military organisation should not necessarily be regarded as an example to this country. In each of them military service is of universal obligation, and to it all other employment under Government, or under local authorities, is of subordinate importance. On the other hand, in this country, military and civil employments are in practice equally voluntary. Each is treated as a distinct profession, for the highest branches of which continuous and systematic training and experience are equally requisite.

"But it must be borne in mind that the present policy of Parliament, in regard to the reorganisation of the army, has been to pass quickly through the ranks a large body of men who, after short service, enter the Reserve, and ought not to be disqualified from the ordinary avocations of civil life ; and it is to give effect to this policy that additional civil employment under the State should be found, if possible, for men when discharged, or passed into the Reserve. While lengthened military employment tends to destroy a man's individuality and sense of responsibility, short service on the contrary, by enforcing habits of discipline, may become an actual qualification for certain classes of civil office.

"In approaching, however, that part of the question which relates to the effect on the civil service of a larger infusion of the military element, your Committee are met by a preliminary inquiry demanding an immediate answer. By gradual steps, some of them attended with no little difficulty, it has been the policy of successive Governments to introduce into almost every branch of the civil service the principle of open competition for first appointment. Except in one or two of the highest departments of the State, the whole clerical staff is recruited by this process. A large proportion of the employes of lower grades are also chosen under this system. Was it, therefore, intended that the reference to your Committee should authorise them to inquire whether this policy ought to be reversed in favour of soldiers and sailors ?

"Your Committee have concluded that the reference to them does not authorise them to propose any such reversal."

In speaking of the smaller appointments available under Government for soldiers and sailors the Committee wrote as follows :—

"With respect to the Army, the preponderance of evidence points in a different direction. The increasing inducements in civil life tend daily more and more to diminish the attractions of military life. This

"has necessitated twice in ten years a large increase to the daily pay of the soldier, without materially improving physically the stamp of men enlisted. Some further stimulus is evidently desirable, and the Committee believe that such a stimulus would be supplied by holding out the prospect of Government civil employ to the discharged soldier. There is good reason to believe that if it were well understood that a considerable number of suitable civil appointments were to be given to soldiers when their term of service expired, the effect on recruiting would be good, and that some men of a better stamp might be induced to enter the Army."

Further on the Committee remark :—

"Allusion has already been made to the policy adopted by France and Germany for recruiting the civil service through the Army. Great care has been taken by the Governments of both those countries to ensure both publicity to the system under which this is accomplished and just attention to the claims of the successful candidates. The territorial organisation of the British Army would admit of the establishment of an equally efficient system in this country."

A careful examination of the history of the reigns of Charles II and James II enables one to understand that underlying every motive which prompts the British tax-payers to support an efficient military machinery, there is a rooted objection to a standing army firmly implanted in the heart of every Englishman. This is so closely allied with the most substantial gains to our civil liberty that it is impossible not to sympathise with the feeling, however unreasonable its application to the circumstances of the present day. No British Parliament can legislate with the idea of establishing privilege for the soldier and not arouse a feeling against the Army itself, whereas the present system more than ever requires that the Army should be brought into harmony with national life. Let each of us accept the difficulty, and determine to promote the efficiency of the service by raising the standard of character with which our men re-enter civil life. In our regimental schools we have an educational machinery that can be developed to meet any requirement, and, provided the regimental system of the British Army is not relinquished, but is loyally maintained in territorial regiments, we have this certainty that we can prove to the nation that the Army may be the best training ground for her sons in view to their success in civil life. If a soldier will but use the means at his disposal during military service, there is no position for which he should not be able to qualify whilst with the colors. He may, too, after service return home with savings in his possession that will ensure his establishment in any honourable career for which he is suited. It is a fact that "open competition" as a means of entering the civil departments of the State has become a national privilege which may not be relinquished, and that the patronage under the head of minor appointments which might be set aside by Parliament as a reward exclusively for soldiers is, comparatively speaking, of minor importance in endeavouring to place Reserve soldiers in employment throughout the country. It only remains for me to give certain facts in proof of what I have said. Last year 14,991 men passed from the Regular Army to the first-class Army

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Reserve. The minor appointments at the disposal of the State are quite insufficient to meet the requirements of these men, nor are they of sufficiently good position for the men to wish for them. I hold that the soldier, after service, if he has made use of the opportunities which I have already pointed out, may claim very much higher positions in civil life than those classed as minor appointments under Government. I want him to be able to compete for entry into every branch of the civil departments of the State in consequence of the qualifications to which he has attained in the service by his educational knowledge, by his established character, and by the certainty that he may be relied upon in cases of danger and emergency to stand by the duty which he is called upon to perform. A study of the debate which preceded the assembly of the Committee, to whose report I have referred, and an examination of our national history in reference to the responsibility of Parliament towards the land forces of the Crown, lead to the conclusion that it has been well decided to leave to the spontaneous action of the nation a work which could never have been efficiently accomplished by legislation.

Systems that work admirably in Germany and France do not apply to the British Isles, where, in regard to civil liberty, we may boast that we are generations ahead of Continental nations. Since the Restoration in 1660, compulsory service in the army, in the usual sense of the term, has been unknown in England; and, though at different times since that date Acts have been passed authorising the impressment of certain persons of blemished character or unsettled mode of life, enlistment has been voluntary. The fact that enlistment is voluntary is the reason why, in fighting power, British soldiers stand second to none, and the existence of the large army of Volunteers, last year numbering 209,365, organised for national defence, is a guarantee that the spirit of the nation is in harmony with the principle under which our army has been for so long maintained in efficiency and has achieved so much. If the country can be made to understand that with a short-service system, a national recognition of the reserve soldier's position in civil life is the only means by which the privilege of voluntary enlistment can be preserved, we may safely rely upon the patriotism which has developed our army of Volunteers to assist any efforts that the army may make to procure for reserve soldiers honourable employment in connection with the territorial system. In explaining why we are justified in putting forward from India the proposals which I am now advocating, it is necessary to remind you that the establishment of British soldiers serving in India numbers 60,000 men; this fact in itself will warrant the action which has already been initiated. I will, however, in explanation read an extract of a telegram from the Calcutta correspondent of the *Times*, published on the 14th September, which states the case with sufficient clearness :—

“The fact that 6,501 British soldiers will join the first-class reserve “this trooping season, and that 1,661 will be invalided from the “effects of the climate, is causing anxiety to the military authorities “regarding the location of these men in civil life under respectable

"conditions. The Commander-in-Chief strongly supports the movement now being made to institute county agencies in connection with the army territorial system, to pass to employment men who have served meritoriously in county regiments. He desires to invite the co-operation of the militia and volunteer battalions, and also to enlist the sympathy and support of employers of labour in England in regard to the movement, which he considers must fail unless it acquires a national character. Nineteen battalions serving in India have initiated regimental action in this direction, and are in communication with their respective depôt centres with a view to creating county agencies. The Indian Government cordially supports the scheme, believing that its acceptance by the mother-country at large may lead to results of the greatest importance. Sir Donald Stewart and the principal military authorities in India are also strongly in its favour, some of them freely expressing the opinion that, unless the country generally is prepared to recognise the status of the reserve soldier, and particular counties to accept the responsibility of helping men who have served meritoriously in the county regiments, the maintenance of a force for Indian service by voluntary enlistment will soon become impossible."

The changes which have been introduced into army administration during the last fourteen years have been authoritatively made, and have been endorsed by national approval. For the most part they have been unacceptable to the officers of the army, and it is not too much to say that the resistance to their introduction which officers throughout the service have systematically practised, has been sufficient to prevent all chance of vitality in a new system. Once the principle of a Reserve Army had been determined on, and in the face of the gigantic armaments on the Continent the country very wisely held it to be necessary to our existence, the basis of a new organisation was very wisely arranged in connection with county administration under which the Militia and Volunteers might become readily united with regular battalions. The historical shires or counties of England owe their origin to different causes; in some cases they represent ancient tribal kingdoms (such as Norfolk, Suffolk, Sussex, Surrey); in others administrative divisions formed round an important town, such as Warwickshire, Nottinghamshire, Derbyshire, &c. The arrangement of the whole kingdom into shires was a work that could only be completed when the country was united under Edgar in A.D. 958, when Dunstan was Primate. It may, however, be accepted that the existing system of county administration had its origin in the division of responsibility introduced when the English, after two centuries of hard fighting, made themselves masters of Britain about the year 600. This system was based upon the principle of individual responsibility in the freeman, and the obligation to maintain the independence of the shire or division which at first was the limit of geographical knowledge of the Englishman of that time. The northern counties have undergone some changes since the Norman Conquest, although the new lines have been drawn upon older landmarks. The counties of England are in fact of Anglo-Saxon origin; they have out-lived the Danish and Norman conquests, have withstood the shock

of civil war and of revolution, and to the end of our history will form the check that is required to balance the rising influence of town populations. If the struggle between capital and labour is to find settlement without injury to property, the solution will be discovered in the division of responsibility and in the guarantees for personal liberty which are afforded by the local character of our institutions, and by the belief in ancient landmarks which the history of counties will justify.

But I am anxious to speak of those units as forming the real groundwork of our military system, which, if it has ever been strained to meet the requirements of conquest as the nation expanded, is in its very essence a system organised for national defence. In discussing the question of home service for British soldiers in the present day, we must recognise that the introduction of short service and the formation of a Reserve Army are the outcome of a determination to protect the country against invasion, when the large armaments of European Powers made it necessary to organise for the defence of the British Isles. The home service army is inseparable from the militia organisation of the country, and the formidable strength which patriotism has raised in our volunteer battalions. If we separate the question of home service and foreign service we can recognise the value of the territorial system to battalions employed in the British Isles, or in the more distant parts of the Empire. In either case it is essential that the national character of the army be maintained, and to do this it is natural to graft our organisation upon the most ancient of English institutions—our county organisation. If county responsibility is acknowledged, not only in regard to the character of recruits furnished to county regiments, but in the matter of the return of soldiers to civil life within county limits, when their period of service with the colors is completed, it may be possible to give the army the national character which is contemplated by the present system of distribution, and by the reliance which the country places in its Reserve forces.

I ask the officers, the non-commissioned officers, and men of the service to pin their faith on the territorial system, to accept it as a national one, and to give it life by their individual exertions.

I have mentioned the separation of home service from foreign service, and all who have studied the question how we are to maintain the necessary complement of soldiers for India, are aware that it is absolutely necessary to make a separation and to hold out to soldiers who mean to serve their country in India some special inducements to go through the trials and drudgery of Indian service. Such inducements have been considered by His Excellency the Commander-in-Chief. They are embodied in the paper which I hold in my hand, and without going through the whole of the paper, I may summarise the propositions by saying that the general idea is to allow a soldier on landing in India to count four years of service for five towards his pension, towards good-conduct pay, towards good-conduct medal, and also with reference to deferred pay. By this means it is proposed that a soldier of sixteen years' service, who has served fifteen in India, shall obtain the pension which he would under the ordinary regulations reach with 21 years of service.

If he is a man of good conduct he will by that time have in his possession £48 of deferred pay, in addition to such savings as he may have made in the same period. It is also proposed to grant him furlough to Europe after ten years if he was behaved well, and in lieu of furlough, should he not avail himself of it, it is proposed to grant him a bounty of £20. By this means it is calculated that every soldier passing to pension at the age of thirty-five would have in his possession at least £100. He would be in receipt of a pension of one shilling a day, and if by means of the organisation now under consideration he can be provided with employment, he can in the full vigour of life enter into a position which every one would respect, and which would result in his ending his days in comfortable retirement. The underlying thought in these propositions has been this—that, whereas it is not possible to raise the daily pay of the soldier in proportion to the continually increasing rate of wages in the labour market, the conditions of service shall be so arranged that a military career shall not disqualify a soldier of good character from competing successfully in civil life at its conclusion, State aid in obtaining honourable employment being afforded. In lieu of State aid I would say National aid, because what we are trying to obtain is a National organisation. It would be encouraged by the State, assisted by the State, and be in accordance with State regulations, but I want to have it worked by the nation; for unless it is so worked, and every single member of the community agrees in the necessity of doing honour to the position of the reserve soldier—we shall not reach the end which we hope to attain. In order, however, that the disqualification under which old soldiers now enter civil life may not exist, the habit of labour should be maintained during the prolonged service in contemplation. Existing regulations in India fully provide for the employment of soldiers on public works, for their instruction in trades, and for their moral and intellectual improvement generally, and more attention should be paid to these matters in future. The assumption throughout is also that men who are permitted to secure the benefits which Indian service thus outlined will hold out, will be men of acknowledged good character, and to secure this it must be arranged that in the cases of soldiers of bad character the exercise of the authority referred to in Section XIX, Part IV, paragraph 166, of the Queen's Regulations be unhesitatingly resorted to in order to effect their discharge from the service. That authority, if exercised in the manner here contemplated, will result in a man of bad character being at once dismissed from the army, not by means of a court-martial, but because we do not want to have him. From the outset, the supposition in all these proposals is that we shall not take recruits of bad character; we shall require the county to certify to the character of a man before he is allowed to become a recruit in a county regiment; we shall require the man to maintain his character throughout his service; and if ever he should prove himself a worthless soldier, we shall discharge him as being no longer of any use to the State. If the exercise of the authority referred to is systematically applied, no difficulty will be experienced in passing men of good character into employment in civil life; the character of the soldier throughout his

service and after leaving the army will be what we wish it to be—so thoroughly established that it will be recognised by the nation.

I propose now to give a short account of what has been done, with the approval of His Excellency the Commander-in-Chief, to push forward the different ideas which I have now very briefly outlined ; and I may begin by saying that when I was at home last year in May I wrote to Sir Donald Stewart from England for his approval to my seeing Lord Wolseley and obtaining his permission to consult people at home in regard to devising means for initiating a scheme for passing reserve men to employment in civil life. Lord Wolseley thoroughly approved of my consulting as many people as I could about it. I at once set to work and conferred with various military and civil authorities ; I communicated with a great many employers of labour, with agents and directors of railway and other companies, and endeavoured to ascertain whether the feeling of the country was at all in favour of this matter being brought forward. Help and encouragement were very generally offered, provided a practical scheme could be devised. At first, I must acknowledge that I did not look at the question as I do now. I myself was for parliamentary action. It was only after some months' consideration and discussion, and a great deal of correspondence with various people, that I arrived at the conclusions which I have put before you to-day. It seemed to me at first as though we must get the Government to do everything for us ; now, however, I am quite satisfied that if we are to accomplish anything we must do it ourselves ; and I am quite certain that if the army will only co-operate in accordance with the principle now adopted by every large community in England, we shall place our soldiers in positions of high trust and responsibility throughout the country.

I reported week by week to Sir Donald Stewart what success I met with, and he encouraged me to persevere, though I am very happy to acknowledge that his caution prevented me from hurrying what I hope has gained very much by a year and a half of systematic reference to the opinions of other people. My own ideas, or those which I held at that time, if put forward, would at once have been pronounced crude, and would have possibly resulted in nothing. Now I am hopeful that what has been suggested may meet with general acceptance. I do not hesitate to say that I am enthusiastic about it. I believe nothing can be done without enthusiasm ; I would ask everyone to be enthusiastic about it, and in that way I hope in the end to succeed.

Nothing further of importance was done during last year beyond submitting for consideration the idea of adapting our army school examinations to the examinations in force under the Civil Service Commissioners. I myself think that there is a great deal to be done in this direction by the officers and men themselves. If the men can be made to understand what very great opportunities they have in regimental schools, they will themselves require that those schools shall give them the knowledge and training necessary to their advancement in civil life. My view of the matter is that this can only be done by

introducing some very considerable changes into the present system, and by making the schools essentially regimental. It was also suggested at that time that reserve soldiers should be employed with home battalions as officer's servants, cooks, orderlies, &c., pending their settlement in civil life; that they should thus take the place of soldiers now classed as non-effectives, and release for drill and training the full strength of such battalions. After my return to India in January last I accompanied the Commander-in-Chief when he travelled in Madras and Bombay, and during the tour opportunities of discussing the question of employment with officers of the service throughout India were offered.

I am anxious to refer to a visit paid by the Commander-in-Chief to the Bombay Tramway stables in February last, when we had the satisfaction of finding the entire management of the Company's stables entrusted to an old soldier, a Farrier Sergeant of the Royal Artillery, whose excellent management has been one of the chief causes of the success which has attended the operations of the Company. On his return to Calcutta His Excellency took into consideration the idea of registering men's names for employment, and authorised me to write to Lord Wolseley on the subject. The reply to that letter was one from Lord Wolseley forwarding to me a draft of General Order No. 79 of the 1st June 1884, which directed the registration of soldiers names at dépôt centres in view to their obtaining aid in procuring civil employment. At the same time I received letters from a number of people in authority at the Horse Guards—all of them encouraging me to persevere. They felt satisfied that whatever was done in India would not retard what was done at home; that, in fact, co-operation was necessary; and that in working in India we might materially assist the efforts which have already been made in England, and which find expression in the General Order already mentioned. Only to-day I have received letters from home telling me that Generals Bray and Cameron have taken the matter in hand, and that other influential officers, such as Lord Chelmsford and Sir Henry de Bathe, &c., are working to get the nation to acknowledge that the reserve soldier shall be properly placed in civil life after he has served meritoriously.

The claim which I would make for the scheme developed under His Excellency the Commander-in-Chief's approval is this, that we propose to reach the country through the battalions of the army. We have asked every battalion to consider the question for themselves, and to act for themselves, with the idea of creating county agencies and of associating themselves in connection with the militia and volunteer battalions of their own counties in forming an organisation which will place soldiers of acknowledged character in good positions in their own counties. I am happy to say that I can give the territorial designations of a great number of battalions that have already initiated regimental action with this object. (Here Colonel Chapman mentioned the names of a number of battalions in Bengal, Bombay and Madras, and said that he hoped nearly every battalion in the Indian Command would soon be joined in the work.) He continued: Instead of an individual having the responsibility of this work, the responsibility has passed to the battalions in the army; and when so many are at work, I am confident

that their efforts cannot be set aside. The battalions in India have invited their linked battalions on home service, as well as the militia and volunteer battalions associated with them territorially, to join in creating county organisations, and have invited large employers of labour to associate with them in carrying out the work, which will be conducted in each instance through the officer commanding the dépôt centre. They have further taken steps to secure the support of county gentlemen and others who possess county influence. Apart from this, with His Excellency's approval, the papers, which I have not read to you in full, have been sent home to be read at the United Service Institution. They have been forwarded to every general officer in command in every part of the British Empire. Ten thousand circulars have been issued at home asking consideration for the scheme; these having been sent to every Colonel commanding a regular, militia or volunteer battalion. They have been forwarded to the whole of the Cabinet, to Members of Parliament, to the House of Lords, to Lord Lieutenants of Counties, Sheriffs, Justices of the Peace, Mayors, Chairmen of Quarter Sessions, Heads of Universities, and to all public schools, to every debating club in England, to all the Masonic Lodges, and to a vast number of employers of labour—to large firms, such as those of Armstrong, Whitworth, Nordenfellt, &c., who are largely connected with the manufacture of warlike *matériel*. All these have been addressed independently; and I may here remark that we stand in India in a rather fortunate position, because we have been able to do all this long before we have heard from the recipients whether they like our suggestions or not. However, we are waiting for their replies, and expect them immediately. Meanwhile, through the kindness of Mr. Cullin, the *Times*' correspondent at Simla, I have been enabled to telegraph week by week to that journal the success which has attended our efforts in India; and during the last three weeks I hope that in the *Times* every Monday morning a paragraph has appeared stating the feeling and opinion in India in favour of the scheme. I hope that by the same gentleman's kindness what His Excellency the Viceroy may be pleased to say this afternoon will also be made known to the British public on Monday morning next; and I have no doubt it will have a very great effect in forwarding the scheme which I have ventured to recommend to your consideration and sympathy to-day.

It merely remains to refer to the question of the employment of native soldiers. And I have only to say that, some months ago, a good many officers connected with the native army had before them the idea of doing something to arrange for native soldiers passing to civil employment. The question involves several changes in the administration of the native army, and the changes which the Commander-in-Chief has allowed me to suggest for the consideration of certain officers who are working out the idea are, briefly, these: That instead of a man's passing to pension after fifteen years' service, he should be allowed, if he elects to do so, to pass into civil employment, the opportunity being given to him of entering civil departments of the State, such as the Opium and Salt Departments, Canal Department, and the Railway service; and that employment in such departments shall be held to

qualify for ultimate pension which he shall attain after 25 or 28 years' service instead of 32. That is the general drift of the propositions. What is being done is this : Brigadier-General Hudson at Multan has been in communication with all commanding officers of the native army and has asked them to consider the question. Now that he has returned to Allahabad he will, with Sir Herbert Macpherson's approval, constitute a representative committee to work out ideas which may be submitted for the consideration of the Government of India. Judging by the approval which has been cordially bestowed by all those in authority who have been consulted, it is hoped that something will be done to establish for the native soldier a parallel scheme to that which we propose for the European soldier, and to constitute what will really be a second class army reserve for India ; that is to say, a reserve which shall not be called upon to serve out of India, or indeed out of its own province,—a reserve that will be able to look after Government buildings and property, and take the place of the soldiers of the fighting line when they cross the Frontier. I may mention in connection with this matter that very recently Colonel Ewart, Deputy Inspector-General of Police, has put forward the idea of employing native soldiers in the Police Department. The system he recommends has been very successfully initiated at Lahore by employing old soldiers as watchmen in charge of goods-sheds, &c. He, however, goes further in his desire to avail himself of the services of pensioned native soldiers, and wishes to place them in charge of railway crossings along the entire length of our railway lines. He also suggests a scheme for employing them in charge of telephones, maintaining communication between police stations, &c. If such a scheme be adopted in India there is no doubt that a very large number of our soldiers will find very excellent employment suited to them, and that we shall have, under the direction of the police, a thoroughly loyal body of men who can be trusted, and whose presence will certainly be a guarantee against crime. If, similarly, employment is obtained for native pensioned soldiers in other State departments, a very valuable reserve to the fighting line of the native army can undoubtedly be created, though it must necessarily be a reserve of the second class.

I ought not to close these remarks without explaining that what I have said on the present occasion, besides representing the views of His Excellency the Commander-in-Chief, reflects also those of their Excellencies General Hardinge and Sir Frederick Roberts upon this subject. Each of them has taken the greatest interest in the proposals now made regarding employment for the European and native soldiers, and I must not omit to say that we have been assisted in forwarding our proposals by their Excellencies Mr. Grant Duff and Sir James Fergusson, by Sir Charles Aitchison, Sir Alfred Lyall, Mr. Rivers Thompson, Mr. Ilbert, and by many other friends who have very kindly endeavoured to interest people in England in the matter. The greater the number of those who undertake to further what has been done, the wider will be the influence which we shall attain, and I trust that any one present who has been at all satisfied with what I have said to-day will endeavour to assist the movement that is now making to obtain a national recognition of the position of the soldier in civil life.

I cannot close without once more referring to the very cordial approval which His Excellency the Commander-in-Chief has given to my labours. Without his advice and encouragement I should have been able to do nothing ; with it, and as his representative, I claim to have done something, and hope to accomplish still more.

HIS EXCELLENCY THE COMMANDER-IN-CHIEF.—Your Excellency, Ladies and Gentlemen :—I have only a few words to say, and that is to explain why this matter was taken up originally. Of course you are aware of the difficulty that we have in keeping up the strength of the army. It is a very serious difficulty, and one of the reasons for it is, I suppose, that it is not quite as popular as it might be ; another and an important reason is the difficulty of dealing with men under the present short-service system after they leave the colours. When I was at home, in 1878, I had many opportunities of meeting reserve soldiers who had been called out in that year, in consequence of complications in the East. I met many old friends amongst them, and their general complaint to me was that, although they had been called out and were very well treated while they were attached to their regiments, the order had gone forth that the men were all to be sent back again, and the question was : " What is to become of us ; we have lost our work ; our employers will not take us on again ; they won't have men liable to be called out without any notice ; and what are we to do ? " Of course I could not say what they were to do ; I could only say : " Why don't you go back to your own county and seek employment where you are known ? " They replied : " It is no use ; we have been to the mills, factories, and large employers of labour, and they all say ' Oh no ! you are a reserve man ; we don't care to have you.' " Well, this struck me as a very serious matter, and the question was how was it to be got over. Of course it was not the fault of the Government, for they had very little employment to offer ; but every body in such cases looks to the Government. I had no opportunity of going properly into the matter at that time, as I had other duties to perform. Since I have had more leisure, we have been working up the question, and I think it is one which is bound to receive attention at home ; for we do not want any great favour from anybody ; we do not want money from anyone ; what we want is that people should recognise their national responsibility. So long as the people of England are not required by law to give their personal service in defence of their country, the nation is bound to support the system by which its defence is maintained. My first idea was the establishment of a system of registration—indeed the system lately introduced by authority. This will no doubt help the men in many ways ; but it does not go quite far enough, and Colonel Chapman's proposals are intended to supplement the present arrangements by establishing local responsibility in the territorial divisions of our military system. If we can, as we hope, interest people of importance and employers of labour throughout the country, we shall have done something to solve this very great difficulty. But what we want especially is the cordial assistance of regiments, and the support of the officers and of the men themselves. The men are a little suspicious about the whole thing, and one of their suspicions is this :—They sometimes say : " Oh ! for goodness sake don't put our names down upon your list, because if you do, the employers of labour will say to us ' You get fourpence a day from the Government, and therefore we will give you fourpence less than we give our other hands.' " That, however, is an apprehension which they need not fear. The men may be sure that they will always get fair play so long as they have good characters, and are prepared to work.

It will thus be observed that our aims are not very extravagant. Our main object is to induce all employers of labour to recognise their national responsibilities, as defined in Colonel Chapman's scheme of county organization.

HIS EXCELLENCY THE VICEBOY.—Your Excellency, Ladies and Gentlemen,—I now rise for the purpose of expressing the feeling which I am confident that you all share, that our best thanks are due to Colonel Chapman for the very interesting lecture which he has delivered to us on this occasion. None of you, I am sure, doubt the importance of the question which he has brought under our consideration, and I can assure him that I sympathise heartily with the objects

which he has in view. We all know that great differences of opinion exist, especially among military men, upon the subject of short service. Some people regard it as a detestable invention, the evils of which, in their opinion, cannot be exaggerated; others hold the opposite opinion. The first class will tell you that the system is so bad that it cannot be amended, and that there is no use in your proposing to amend it; the second class, to which I belong, though not blind to the defects attaching to the short-service system, on the contrary believe that it is the best and the only system open to adoption in England under the circumstances of the times in which we live; and that, having regard to those vast armaments, so enormous and, to the countries in which they exist, so oppressive, which are to be found on the Continent of Europe, it was essentially necessary that England should take some means by which she could secure that, upon the occurrence of an emergency, she could call back to the ranks of her army men who had had the advantage of previous military training. That is the necessity which forced the country to adopt the system of short service, and what we have to do with that system is to make the best of it, and to try, by every possible means in our power, to render it a success. Well, now, nothing can tend, I should think, more to secure that desirable result than the adoption of some such arrangements as those which have been sketched out to us this afternoon by Colonel Chapman. It is essential to the satisfactory working of the short-service system, and to the popularity of the army in which it exists, that soldiers, when they return to civil life, should without too great difficulty find some means of obtaining sufficient and remunerative employment among the civil population. Without that, their position is one of difficulty and of suffering, and the existence of men throughout the country in that condition, while it is hard and injurious to the men themselves, must inevitably tend to diminish the attractions of the Army and to check the enlistment into it of good and steady men. What we have, therefore, to do is to see if any steps can be taken to secure to those reserve men and old soldiers when they leave their standards, the means of employment in civil life.

I am very glad to find that Colonel Chapman has abandoned the idea, which he very naturally originally entertained, of relying mainly upon the Government in this matter. As the Commander-in-Chief has truly said, men are apt—and men in India perhaps more than in England—to think that everything must be done for them by the Government; but that is a very great mistake, and in this matter, as Colonel Chapman has convincingly shown, there is very little really which the Government as a Government, apart from the nation, can do; and therefore the appeal is rightly made to the nation at large that the public should come forward in their respective localities to help in this important national work. The present basis of our Army system is a territorial basis; having once established the Army upon that foundation, I quite agree in the opinion that we have heard expressed that what we have to do is to make the Army more and more thoroughly territorial, and to establish more and more completely local relations between regiments and the counties with which they are connected. No doubt there are difficulties in doing so; you have to look to your large centres of population for recruiting purposes, but the closer you can make the local connection, the more completely you can bind together the Army with the Militia and the Volunteers in each county, the more solid will be the foundation on which your present system rests. Therefore I rejoice to find that the object of this movement is to make an appeal which is, I understand, to emanate from the regiments themselves to the leading men in each county in all positions of life, that they should come forward and help in this important work. I believe that by adopting that course, you are adopting the course most likely to lead to ultimate success, and I am very glad to find that the officers of regiments in India—as I hope also officers of regiments in other parts of the world—are endeavouring to excite local interest in the scheme now propounded. Colonel Chapman has devoted himself with a degree of zeal and energy to this work which entitles him to the gratitude of the British soldier. He has told us of all the letters that he has written and the papers he has circulated on the subject, and I only hope that, two or three mails hence, when the answers to them are received, he will find that his efforts as regards both the European and the Native Army have been attended with the success which they undoubtedly deserve. But the work is not an easy

one. When you make appeals to employers of labour to take men into their employment—although if you make a stirring appeal to their patriotism they may be inclined to listen to you while they are in the room where the appeal is addressed to them—when they come away they will say to themselves: "It is impossible for us to conduct our business if we employ men who are not fitted for the work we give them." And you cannot complain of that. If you want to make this system successful you must combine with it a system of training in regiments such as will fit men to discharge the duties upon which they may be employed in civil life in a satisfactory manner. You have no right to go to employers of labour and ask them to take men who are of no use to them, because they have been soldiers, but you have every right to go to them and say: "We have done our best to fit these men for your employment; now we call upon you as good citizens to take them and give them that employment for which we believe them to be fitted." Thus organised, I have every reason to hope that there is a good chance that this system may be crowned with success. I certainly shall rejoice if it is so, and I can only say that when I leave India and return to England I shall do my best to forward in the country the work which I have had the pleasure to advocate here to-day.

POSTSCRIPT.

EMPLOYMENT IN CIVIL LIFE FOR RESERVE SOLDIERS.

If it be accepted by the nation that honorable employment in civil life is the proper reward for soldiers after meritorious military service, and if county responsibility be acknowledged in the matter of securing such employment for men who have served with county regiments, it may, with some reason, be argued that the machinery at disposal for maintaining in efficiency, the establishment of short service and reserve soldiers required for the home army, is sufficient.

The territorial organization which has been adopted commends itself as uniting the regular, militia, and volunteer battalions for the defence of the country, upon a basis which has a national character, and the defects in the working of the present system may be remedied without the intervention of Parliament; they are apparent, and existing regulations are sufficient to overcome them.

But, if the privilege of recruiting, by voluntary enlistment, is to be preserved, the question which needs solution by Parliament, is this: What sufficient and satisfactory compensation can be made, under national authority, to employers of labor, whenever, in case of national emergency, they are forcibly deprived of the services of men who belong to the Reserve Forces?

Obligation, on the part of Parliament to vote a full compensation in money to employers, whenever the reserves are called out for war, would be a guarantee that true national emergency justified their embodiment.

It is hoped that the county agencies which are in process of development may, under authority, become a part of our military system; if they are properly representative agencies in each county, they may establish a lasting connection between the army and the country, and deal with local questions whether affecting the employer or the reserve soldier.

Provided the conditions of foreign service are separately considered, and suitable inducements are offered to soldiers who elect to serve abroad, the army may be relied on to work out its own reformation, and to maintain its character and efficiency.

SIMLA, 22nd Oct. 1884.

E. F. C.

I.

STATE AND NATIONAL RESPONSIBILITY IN REGARD TO THE EMPLOYMENT OF RESERVE SOLDIERS, AND THEIR TRANSFER TO CIVIL LIFE.

SINCE the paper which follows was written, there has been a very general acceptance, by the Service, of the principle that direct responsibility attaches to regiments in regard to the preparation of soldiers for work in civil life, after short service with the colors, and the publication of General Order No. 79, dated 1st June 1884, which directs the registration of soldiers' names at dépôt centres, in view to their receiving assistance when seeking employment within county limits, has stimulated regimental action. It appears in fact likely that the army will undertake to devise for itself the best method of giving full effect to the suggestions of the General Order already cited.

A movement is now on foot to create, by means of regimental influence, agencies that can embrace the recognised recruiting areas of the several territorial regiments associated with each county under the existing system of distribution, and in doing so, to invite the co-operation of militia and volunteer battalions in maintaining locally the interests of the regular battalions when absent from the county.

That such endeavour is more in accordance with our institutions, and with the principle of voluntary enlistment, than State organisation, cannot be denied; if it meets with success, we may confidently look for such mutual dependence between the service and the reserve battalions of our territorial regiments, as will create a national army without conscription. It is, however, necessary that the effort which the army is prepared to make, be recognised by the people of England, and that not only the sympathy of militia and volunteer soldiers be given to it, but that county authorities, and local employers of labor, endorse it by very hearty support, and by direct assistance in the work of re-absorbing into civil life soldiers who have served meritoriously with county regiments.

With such aid, the development of the county agencies in contemplation may be confidently left to regimental action, the War Office exercising a wise direction, and accepting responsibility, in regard to employment, which may be beyond the reach of county influence, or which is strictly confined to State departments.

SIMLA, 18th August 1884.

E. F. C.

A Select Committee of the House of Commons assembled in 1876, and was reappointed in 1877—"To enquire how far it is practicable that soldiers, sailors and marines who have meritoriously served their country, should be employed in such civil departments of the public service, as they may be found fitted for."

2. The subject referred to the Committee was said in their report* to

* Soldiers', sailors' and marines' civil employment. Ordered by the House of Commons to be printed, 31st July 1877.

involve two questions: one, whether a better class of men would be induced to enter the military or naval service, if the prospect were held out to them of civil employment, after a certain period of meritorious service; the other, what would be the effect on the civil service of the introduction into it, in a greater degree than hitherto, of persons who have served in the army or navy.

3. In regard to the first question, the Committee recorded their opinion that "the recent policy of Parliament in regard to the reorganization of the army, has been to pass quickly through the ranks a large body of men, who, after short service, enter the reserve, and ought not to be disqualified from the ordinary avocations of civil life; and it is to give effect to this policy that additional civil employment under the State should be found, if possible, for men when discharged or passed into the reserve. While lengthened military employment tends to destroy a man's individuality and sense of responsibility, short service, on the contrary, by enforcing habits of discipline, may become an actual qualification for certain classes of civil office."

4. In approaching, however, the question which relates to the effect on the civil service of a larger infusion of the military element, the Committee remarked that—"By gradual steps, some of them attended with no little difficulty, it has been the policy of successive Governments to introduce into almost every branch of the civil service the principle of open competition for first appointment."

5. They recommended, with reference to civil appointments made under the system of open competition, and for which soldiers and sailors are deemed to be suited, that great care should be taken so to adjust the conditions of examinations, as to give fair weight to those branches of knowledge in which their training has especially enabled them to make progress.

6. The conditions as to age and marriage should also be carefully reviewed in some cases. If, for instance, the rule that the superior limits of age may be extended in proportion to the period of a soldier's service, applies to a particular class of civil employment, it is manifest that in such cases the rule excluding married candidates should also be relaxed.

7. In regard to the main object of the Committee's enquiry "whether it would be to the advantage of the army and navy that civil employment should be held out to the recruit as the reward for efficient military service," they recorded the following remark: "The increasing inducements of civil life tend daily more and more to diminish the attractions of military life. This has necessitated twice in ten years a large increase to the daily pay of the soldier, without materially improving physically the stamp of men enlisted. Some further stimulus is evidently desirable, and the Committee believe that such a stimulus would be supplied by holding out the prospect of Government civil employ to the discharged soldier. There is good reason to believe that, if it were well understood that a considerable number of suitable civil appointments were to be given to soldiers, when their term of service expired, the effect on recruiting would be good, and some men of a better stamp might be induced to enter the army."

8. In speaking of the fitness of non-commissioned officers for civil clerkships, the Committee remarked—"There appears to be no sufficient reason why well conducted Privates might not be eligible for inferior appointments even before the completion of their term of service."

9. An examination of the very important evidence upon which the Report of the Committee was framed, and the earnest hope expressed by them that the recommendations which they had made might be taken into consideration with as little delay as possible,—as also the opinions expressed in Parliament previous to the assembly of the Committee itself, led to the expectation that the question of Government responsibility in regard to the employment of soldiers in civil life, after the performance of meritorious military service, had passed beyond the stage of discussion—it may, however, be asserted that every measure of Government relating to enlistment, reserve service, or final pension which has been initiated or developed during the seven years that have passed since 1877, has directly avoided reference to such responsibility.

10. The position of a soldier of the reserve in the British army has no parallel. He remains liable for military service in times of "national emergency," and is consequently held by employers of labor to be of less value than a man who is under no obligation towards the Government. He is at the same time actually disqualified, on account of his age, from competing to enter the civil departments of the State. The experiences of our reserve soldiers who were called upon to take part in the Egyptian Campaign, and were thus deprived of regular occupation, are notorious: in the interest of economy, the Government dispensed with their services when the campaign was over as hurriedly as was possible; and they were too often refused re-employment in civil life by their former masters, who judged it inconvenient to entertain men whose services might at any moment be required by the State.

11. In suggesting certain steps which may, it is hoped, correct this anomaly, it is recognised that parliamentary action in the direction indicated by the Committee of 1877 cannot be expected, the principle of open competition as the sole means of entry to the English civil service being a national privilege; also that those Government appointments having "the lowest remuneration" which are not obtained by open competition, form too important a factor in what may be termed indirect influence at elections, to be set aside exclusively for soldiers and sailors under the present parliamentary system. In this respect, however, it may be noted that the extension of the franchise will give the reserve soldier a fresh importance, by making him, as a householder, equally eligible with others for such employment.

12. If the machinery now available can enable a soldier at the conclusion of his first period of military service to compete advantageously for admission to the civil service, or can render him, at the time when he passes to the reserve, more valuable in the labor market than a man who has not had the advantage of military training, it seems possible to improve the status of reserve soldiers very materially, without reference to Parliament, and to give a stimulus to recruiting, which may prove of a lasting character.

13. That the educational system of the army may be made to

accord with the requirements of the Civil Service Commissioners for entrance to the civil departments, and can be brought in harmony with the national plan, is beyond question; it is merely necessary to obtain the concession in favor of soldiers, in regard to age which was recommended by the Parliamentary Committee of 1877, to allow of men being prepared in regimental schools for civil service examinations; nowhere can a more efficient educational course be undergone, within certain limits, than in a regimental school; and as suggested by the Committee in regard to civil clerkships, there appears to be no sufficient reason why well conducted soldiers might not be eligible to compete, even before the completion of their term of service.*

14. The majority of our recruits must, however, at all times be drawn from the laboring classes; in passing them to civil life, while retaining a hold on their services in case of national emergency, not only is it the duty of the Government to ensure them suitable employment, but in view to their efficiency, it is directly the interest of the State to watch over their future, and to avow a distinct responsibility in their welfare. The Government in the position of last employer must necessarily guarantee the character of the discharged soldier, and should also create the agency by which his further employment may be ensured.

15. A careful examination of the labor market will shew that wages of 25 shillings a week and upwards are always available for able-bodied men of guaranteed good character. It is the purpose of this paper to shew that the agency by which employment may be obtained for reserve soldiers, may readily be developed under the territorial organization of the army at existing depôt centres, without materially increasing the military estimates.

16. The territorial system is the basis of our reserve organization, and its development beyond the present limit should be the legitimate means for strengthening the army reserve. It is clear that the lack of cohesion between the several battalions constituting the territorial regiment is due to the failure of the depôt centre to perform the part originally assigned to it, in obtaining the requisite number of recruits for the service battalions, and in keeping touch with the regimental reserve.†

17. To unite the divided interests now belonging to the battalions which are connected with a particular territorial district, and to represent with county and municipal authorities their close association with local progress and advancement, the Commandant of each district centre should be in actual fact, the Colonel Commandant of the whole of the

* *Horse Guards. G. O. No. 58, dated 1st August 1871.*

In 1871 H. B. H. the Field Marshall Commanding-in-Chief desired to impress upon soldiers the advantages, which they might secure by qualifying themselves during active service, for being placed, when they left it, on the register of the Civil Service Commissioners, for employment as writers in the various public offices, and held out to them the promise of military clerkships in the War Office, in preference to other registered writers.

The qualifying examination embraced the following subjects: Handwriting, Orthography, Arithmetic, and Copying Manuscript.

† Reserve men are at present, not borne on the rolls of the territorial regiment in which they have served, but of the district in which they are residing.

county battalions constituting the territorial regiment or regiments, exercising a distinct authority towards them, and becoming absolutely responsible for the supply of recruits, and the transfer of men to reserve service, while his position in regard to the Lord Lieutenant, Sheriff, Mayors of towns, and other local authorities, should in all such matters be fully recognised, and his authority be paramount.*

18. The registration of soldiers' names for employment, while actually serving, and their location when discharged from the dépôt, would form part of the regular duties of the staff at dépôt centres, and the very best regimental officers should be employed for this purpose.†

19. It is not necessary to suggest details which can only be arranged in concert with local authorities, but having in view the tendency to consider the convenience of the soldier in regard to the period for which he shall be required to enlist, and the success which has hitherto rewarded every step taken to promote the interest and welfare of the individual while serving with the colors, it may safely be assumed that the adoption of responsibility in regard to a soldier's future in civil life whenever he may elect to pass to the reserve, will not only stimulate recruiting, but will retain men with the colors under re-engagement.

20. It is necessary in maintaining such a labor-agency as is in contemplation, to allow of men who, on discharge, elect to make use of it, to prolong their service temporarily at the dépôt centre until they are actually provided with employment, and it is submitted that within the limits of the establishments at home and abroad it may be arranged to retain as supernumeraries awaiting transfer to the reserve, a limited number of soldiers who can conveniently perform the duties of non-effectives (officers' servants, orderlies, cooks, &c.) with the home battalion, thereby releasing the full strength of the battalion for training duties. Just as the Government guarantee towards obtaining employment should be conditional on established good character, this privilege should be contingent on good behaviour.‡

* The selection of officers for the control of districts in the sense implied, is of the first importance in extending the influence which should be developed by the territorial system; the officer employed to carry out the responsible duties connected with this position, should have the rank of a Brigadier General, with a Brigade Major as his Staff Officer, the command of each regimental dépôt proper being separately exercised by a Field Officer detailed regimentally; this will admit of the grouping of districts in the same county under one commandant—*cide* Lancashire, pp. 24, 25.

† The agency under Government for placing soldiers in employment, and for watching over their interests during the year, in which the State can claim their services, should be entrusted to the District Staff, and by them be connected with regimental life. A reference to the system in force with the Corps of Royal Engineers will indicate how powerful such an agency can become, and how important the regimental connection is in every period of a soldier's history.

Since this paper was written, a General Order (Horse Guards' G. O. No. 79, dated 1st June 1884) has been published, instituting a "register for civil employment," to be kept at the head-quarters of each regimental district, with a view to assisting men discharged from the army on the expiration of their engagement, or on transfer to the army reserve, in obtaining employment in civil life.

‡ If the difficulties now experienced by the reserve soldier in obtaining employment in civil life are removed, it will be possible to prolong the period of

21. The Government undertaking to furnish the guarantee to the employer for a man's established character, and for the future good behaviour of a reserve soldier, it seems necessary, with his own consent, to hold in the soldier's name a *substantial* security for good conduct, and a reference to the Confidential Report* of the Committee appointed in 1878 by the Secretary of State for War "to consider the conditions "of a soldier's service, as affected by the introduction of the short-service system, and other matters connected therewith," would seem to indicate that such security may be arranged for in regulating the issue of "deferred pay," and in reserving a proportion of good conduct decorations for issue to reserve soldiers. It is more than probable that if directly associated with the volunteer battalions of the territorial regiments, a considerable proportion of reserve soldiers would elect to undergo a short annual training, in view to their ultimately obtaining a good conduct decoration.

22. The War Office Committee did not judge it advisable to issue good conduct pay to soldiers serving in the reserve, but their recommendations indicate the importance of establishing a closer connexion between the reserve and the service battalions, and in dealing with the question of the civil employment of soldiers they remarked—"The "Committee fully agree with the opinions so strongly expressed by "many Commanding Officers, that the employment in Government "civil appointments of soldiers who have completed their term of service "with the colors, would not only act as a great incentive to enlistment, "but would also induce many of our best non-commissioned officers to "extend their service, or to re-engage for pension.

23. "With reference to the report of the Select Committee of the "House of Commons (1876-77) on the civil employment of soldiers, "sailors and marines, it appears that, although the labors of the Com- "mittee were continued through the sessions, they did not result in "any definite scheme or recommendation.

24. "It is a matter of regret that the Select Committee were not "able to arrive at a more satisfactory result, still it may be found pos- "sible to work out some scheme by which such civil appointments as "are at the disposal of Government may thereafter be made avail- "able for intelligent and well educated soldiers, who have completed "twelve years service with the colors, or who have been discharged to "pension.

reserve service so as to ensure his services being available up to the age of forty, thus adding at a comparatively small charge to the strength of the reserves.

* *Subjects of Report by the War Office Committee.*

Good Conduct Pay.

Deferred Pay.

Discharge by Purchase.

Minor Punishments.

Court Martial Punishments.

Reckoning of Service.

Improvement of the Pay and Position of Non-Commissioned Officers.

Good Conduct Decoration and Medal.

Pensions.

Miscellaneous Proposals.

25. "It is desirable that the instructions delivered to soldiers when they pass to the reserve, should be amplified, so as to explain their obligations to the State, the rules to which they are subject whilst in the reserve, their liability for army service, and the mode in which they would be called to the colors on mobilisation."

26. A consideration of the various efforts which have already been made in this direction leads to the conclusion that the only way by which remunerative civil employment under Government, or in the labor market of the country, can be secured to soldiers who have completed their period of service with the colors, is by rendering the men themselves, through their army training, better qualified than others to compete for employment in civil life.

27. The purpose of recent regulations in regard to enlistment is to require good character as a first essential in a recruit, while the tendency to reduce punishments, and the improvements created in the position and prospects of non-commissioned officers, all point to a determination to raise the moral standard in the soldier. The growth of education in the country has already done much, and we may fairly point to the improved conduct of soldiers in the army as a proof that considerable success in securing recruits of good character has been obtained.

28. If, however, the army is to be accepted by the nation as the best training ground for her sons, the power of discharging men who after a fair trial of some months are held to be unlikely to prove efficient soldiers, or whose characters do not warrant their retention with the colors, should be vested in officers holding the position which has been indicated as suitable for the officer commanding the dépôt centre.* Once the reputation of the soldier as the most efficient worker in civil life has been established, not only Government appointments, but, as in Germany, the best positions under employers of labor throughout the country, will be acquired by soldiers who have served with the colors.†

* *Vide* Section XIX. of the Queen's Regulations.

It would not check the flow of efficient recruits to the colors if all were required to read and write, and to furnish a certificate of character on Army Form 166.

G. O. 90 of 1883, and accompaniment to Horse Guards G. O. 134 of 1883.

The extension to the whole of the line battalions of the privilege accorded to the Foot Guards, by allowing soldiers to enlist for any period of not less than three years with the colors, with the privilege of renewing such service at pleasure, might fairly be coupled with permission for reserve soldiers to return to active service under the same conditions as mere re-engaging.

† The sudden removal of the restraints of discipline when soldiers have ceased to serve, is held to result in their, at once, bringing discredit on themselves, and on the service, so as to interfere with their chances of obtaining employment, and it is clearly necessary to maintain a watchful control over their actions, consistent with civil liberty, after they have left the colors. The formation of benefit clubs for reserve soldiers, of Rifle Clubs, with permission to shoot on military ranges, under direction or in connexion with the volunteer organisation now existing, appear to be methods worthy of consideration; the clubs having a military character which hold reserve soldiers together in Germany, are an example of a singular vitality and enthusiasm amongst soldiers who have passed into civil life.

29. The example of an agency to secure labor for pensioned soldiers is not far to seek, and the success which has attended Captain Walter in establishing the Corps of Commissionaires without assistance from Government, only shows that a Government agency, in accord with the territorial system, if supported by commanding officers, must be capable of placing reserve soldiers in positions of trust and competence throughout the country. If this is accomplished, it is not too much to say that the able-bodied strength of the nation may be induced to pass through the ranks without conscription.

30. In putting forward the above idea, the difficulties attending the employment of British soldiers on foreign service are not lost sight of; but if we recognise that the ruling principle of military service under the British Government is, that the soldier effects a voluntary contract with the State for the service he engages to perform, and if in arranging to transfer the soldier after service to a satisfactory position in civil life, we have discovered the real inducement to serve under the conditions of home service, it is only necessary to ascertain what inducements are required to make a soldier elect voluntarily to exchange home for foreign service, and how to arrange for his transfer from the home to the foreign battalion of his territorial regiment.*

* To carry out more effectually the transfer of soldiers from home to foreign service, some modifications of the grouping of regiments laid down in Army Circular, dated 1st July 1881, may be necessary; the direction in which this may be made would seem to be the union of the several regiments connected territorially within each county, so as to ensure a proper correspondence at all times between battalions at home and on foreign service, the establishments of county regiments being grouped under one head for purposes of recruiting and discharge, transfer to the reserve, &c.

The County of Lancashire has seven Regimental Districts situated within it, *viz.*, the 4th Royal Lancaster Regiment; the 8th King's Liverpool Regiment; the 20th Lancashire Fusiliers; the 30th East Lancashire Regiment; the 40th South Lancashire Regiment; the 47th North Lancashire Regiment; the 63rd Manchester Regiment.

The Royal Lancaster Regiment, or 4th Regimental District; Head-Quarters of Regimental District—Lancaster; commanded by a Lieutenant-Colonel.

Is composed of:—

1st Batt. 4th Foot	...	Preston.
2nd Batt. 4th Foot	...	Bombay.
3rd Batt. 1st R. Lan. Mil.	...	Lancaster.
4th Batt. 1st R. Lan. Mil.	...	Lancaster.

Volunteer Battalion:—

Late 10th Lan. Vols.	...	Ulverston.
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The Liverpool Regiment, or 8th Regimental District; Head-Quarters of Regimental District—Warrington; commanded by a Lieutenant-Colonel.

Is composed of:—

1st Batt. 8th Foot	...	Cork.
2nd Batt. 8th Foot	...	Bengal.
3rd Batt. 2nd. R. Lan.	...	Warrington.
Mil.	...	Warrington.
4th Batt. 2nd. R. Lan.	...	Warrington.
Mil.	...	Warrington.

Volunteer Battalions:—

1st Lan. Vols.	...	Liverpool.
5th Ditto	...	Liverpool.
13th Ditto	...	Southport.
15th Ditto	...	Liverpool.
1st I. of M. R. V. C.	...	Liverpool.
18th Lan. Vols.	...	Liverpool.
19th Ditto	...	Liverpool.

31. The interests of the British soldier, wherever he may be serving, are identical, the ultimate aim of the individual being transfer to civil

The Lancashire Fusiliers, or 20th Regimental District; Head-Quarters of Regimental District—Bury; commanded by a Lieutenant-Colonel.

Is composed of :—

1st Batt. 20th Foot ... Fermoy.
2nd Batt. 20th Foot ... Bombay.
3rd Batt. 7th Lan. Mil. Bury.
4th Batt. Ditto ... Bury.
Depôt ... Bury.

Volunteer Battalions :—

Late 8th Lan. Vols. ... Bury.
2nd Lan. Vols. ... Bury.

The East Lancashire Regiment, or 30th Regimental District; Head-Quarters of Regimental District—Burnley; commanded by a Lieutenant-Colonel.

Is composed of :—

1st Batt. 30th Foot ... Bengal.
2nd Batt. 59th Foot ... Dover.
3rd Batt. 5th Lan. Mil. Burnley.
Depôt ... Burnley.

Volunteer Battalions :—

2nd Lan. Vols. ... Blackburn.
3rd Lan. Vols. ... Burnley.

The South Lancashire Regiment, or 40th Regimental District; Head-Quarters of Regimental District—Warrington; commanded by a Lieutenant-Colonel.

Is composed of :—

1st Batt. 40th Foot .. Bengal.
2nd Batt. 82nd Foot ... Aldershot.
3rd Batt. 4th Lan. Mil. Warrington.
Depôt ... Warrington.

Volunteer Battalions :—

9th Lan. Vols. ... Warrington.
21st Do. ... St. Helens.

The North Lancashire Regiment, or 47th Regimental District; Head-Quarters of Regimental District—Preston; commanded by a Lieutenant-Colonel.

Is composed of :—

1st Batt. 47th Foot ... Bombay.
2nd Batt. 81st Foot ... Portsmouth.
3rd Batt. 3rd Lan. Mil. Preston.
Depôt ... Preston.

Volunteer Battalions :—

Late 11th Lan. Vols. ... Preston.
Late 14th Do. ... Bolton.

The Manchester Regiment, or 68rd Regimental District; Head-Quarters of Regimental District—Ashton-under-Lyne; commanded by a Lieutenant-Colonel.

Is composed of :—

1st Batt. 68rd Foot ... Tower of London.
2nd Batt. 96th Foot ... Bengal.
3rd Batt. 6th R. Lan. Mil. Ashton.
4th Batt. 6th R. Lan. Mil. Ashton.

Volunteer Battalions :—

4th Lan. Vols. ... Manchester.
6th Do. ... Manchester.
7th Do. ... Ashton.
16th Do. ... Manchester.
17th Do. ... Salford.
20th Do. ... Ardwick.
22nd Do. ... Oldham.

The fact that there are seven separate Regimental Districts competing for Recruits in the county of Lancashire, prevents the county authorities from recognising their responsibility in stimulating the supply of recruits, and in watching over the soldiers returned to civil life in the county after service with the colors.

life with a competency, or with an assured means of gaining a livelihood ; his service with the colors is temporary, varying in period in accordance with his own election.

32. The policy of the Government of India, by which subordinate appointments in the civil departments of the Government are reserved, in most cases, for natives of India, has made it difficult, if not impossible, for the British soldier to look forward to his transfer to civil life in India ; it is, therefore, necessary for the Government of India to consider what special inducements it can offer to men who may select Indian service. The action of the Indian Government above referred to limits this consideration to a pure question of finance, summed up under the heads of increased pay and ultimate pension. Increase of pay should no doubt be offered for each additional year of service abroad, and re-engagements may be stimulated by bounties in proportion to the actual need for men at the time. A system of proportionate pensions, commencing after a short period of foreign service, should be introduced, while the greatest liberality towards soldiers disabled at any time by sickness or wounds contracted on foreign service, is obligatory.

33. The transfer of soldiers from home to foreign service during periods of peace may, it is submitted, be greatly simplified if in dealing with enlistment for home and foreign service, the sanctioned establishments for the army at home and abroad are taken together, enlistment being arranged to take place at fixed intervals during the year, so that batches of recruits are united in training and pass at one period to the ranks and to foreign service.

SUMMARY OF PROPOSALS.

I.—The recognition by Government of responsibility in regard to the welfare in civil life of soldiers who have served meritoriously, and the creation of a Government agency in connection with the territorial distribution of regiments, to procure employment in civil life for soldiers during their reserve service.

II.—The development of the existing organization to such an extent as will group the regimental districts in each county under one Commandant, who will exercise command of all the county battalions serving at home, and arrange the supply of recruits for

The want of barrack accommodation at particular localities to some extent restricted the application of the territorial system adopted in 1881, it having been found possible to do no more than convert Brigade Depôts into Regimental Districts, and it is probable that no change can now be made in the actual position of Regimental Depôts ; but the district should correspond actually with county limits, the District Head-Quarters being at the chief town of the county in all cases.

The fact that the bulk of the recruits for the army are enlisted in the metropolis, can surely be met by increasing the number of regiments immediately associated with the county of Middlesex, or by arranging for the formation of a "London Company," with each of a certain proportion of the county regiments.

The more complete localisation of regiments in Ireland may not at present be possible, and the application of the suggestions now made may be judged to be difficult in connexion with that country ; this need not, however, interfere with the acceptance by Government of the responsibility proposed.

those that are on foreign service, this officer being given the rank of a Brigadier-General.

III.—The training of soldiers in the service to compete successfully in civil life, educationally and otherwise.

IV.—The separation of the questions of home and foreign service, and the consideration of the inducements which may be held out to soldiers to accept transfer to foreign service, as well as to prolong their service abroad.

V.—The bringing of the reserve organisation of the army more directly into accord with county administration, and with the national development, claiming from county authorities, and from local employers of labor, direct assistance in the work of absorbing into civil life, soldiers who have served in county regiments.

The certainty that after meritorious service in the army, non-commissioned officers and soldiers will be aided in whatever career they may adopt, by a powerful Government organisation, at whatever period of life they may elect to quit the colors, will, it is confidently asserted, not only secure an increased number of recruits, but will retain with the colors many non-commissioned officers and men who will elect to prolong their service, in consequence of the assurance that State responsibility in regard to their future is acknowledged. The measures proposed will further increase the number of reserve soldiers, consolidate the reserve, and add materially to the military strength of the country.

SIMLA, 17th May 1884.

E. F. C.

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II.

BRITISH SOLDIERS FOR SERVICE IN INDIA.

Prolongation of Service for Pension, &c.

The exceptional difficulty now experienced in making military service attractive during peace, and in providing, under a system of voluntary enlistment, the number of recruits required for the army at home and abroad, is mainly due to the change which the material progress of the country has made in the labour market, and the increase in the rate of wages that may be obtained in civil life.

2. Further, the introduction of a short service system, and the consequent changes in army organisation, have made it almost impossible to obtain for India, by the ordinary method, the complement of men required to keep up the fixed establishment, and as recently as last year, an extraordinary "bounty" was offered to induce short-service men to extend their service in India so as to supply deficiencies; such enticement is, however, opposed to principle, and cannot be justified, and if pursued in each year that numbers fall short, the amount of bounty will probably have to be increased, until its payment will become impracticable.*

3. It is the purpose of this paper to show what changes in the condition of Indian service might, it is thought, advantageously be made at the present time.

4. Statistics justify the assertion that after from 14 to 15 years of continuous service in India, a British soldier has reached the limit of his efficiency for military duty. It is, therefore, for the interest of the State to obtain the services of European soldiers in India who are of a suitable age (say 20 years), during the 14 or 15 years of their life which follow; and to arrange that soldiers shall pass to civil life while still retaining physical vigor. Discharged soldiers whose ages vary from 34 to 36 years are capable of performing good work in England or the Colonies, although they may be held unfit for further active military service in a climate like that of India.

* A return is annexed as Appendix B, shewing the deficiency of men in the British Army in India from 1879 to 1884.

A return is also annexed as Appendix C, shewing the number of men who have re-engaged or extended their service in India during the last five years.

By Indian Army Circulars, Clause 205 of 1882, a bounty of Rs. 50 was offered to men extending their service in India for two years. Clause 85 of 1883 offered a bounty of Rs. 120 to men extending their service to ten years, those who previously extended for two years receiving the difference Rs. 70.

5. The recent policy of the Government of India, in regard to the admission of Europeans to subordinate offices in civil departments, and the general movement in favour of employing native labour, have made it well nigh impossible for a soldier, who has completed his military service, to obtain employment in the country; yet the real aim of every soldier, whether at home or abroad, is his eventual establishment in remunerative work, or security against want, by means of a well earned pension.

6. The certainty that at the close of his military career employment in civil life, suitable to his capacity, will be obtained for him, will make a soldier satisfied to give to the State, in a foreign country, the best years of his life; and will remove from the minds of recruits the uncertainty in regard to their future, which is the real bar to enlistment. It is, however, necessary for the State to create the agency by which such employment may be ensured to soldiers who have served meritoriously.

7. A recent Horse Guards' G. O.* directing the registration of reserve soldiers at dépôt centres for employment, indicates the adoption of this principle in connection with men, who after short service pass to the first class army reserve, and considering how soldiers are to be obtained for Indian service, the inducement which "continuous employment" holds out, appears to be the main factor that is needed to give life to the present system.

8. The agency adverted to, which is in process of organisation in England, is in connection with the territorial system. It will, no doubt, be successful, and add largely to the number of men who enlist for short service; but, if it is desired to ensure the popularity of prolonged military service in India, an agency of a different description must be created and maintained, by means of which soldiers returning from India, and holding a good character, may be passed into suitable employment in civil life; such agency would have to deal with soldiers who have served for pension, and whatever assistance it may derive from dépôt centres, its aim and purpose would be distinct from that which deals with reserve men.†

9. The development of the Colonies, and the probability that trade between India and Australia will steadily increase, lead to the supposition that many of our soldiers who have completed their service in India, may wish to proceed to the Colonies so as to join friends or relations established there. Whatever agency therefore is set on foot, should embrace this field of employment, and the opportunities which may thus be obtained, for soldiers who have served in India should be made known by recruiters.

* Horse Guards' G. O. No. 79, dated 1st June 1884.

† The present Corps of Commissionaires is a model for such agency, and the success which has attended its working is a guarantee that a State agency of a somewhat similar character cannot fail to find employment in England for British soldiers, who have served meritoriously in India.

A note by a commanding officer, regarding the manner in which a regimental agency for placing discharged soldiers and pensioners in employment, has, for some time, been successfully worked, is annexed as Appendix D.

Indeed, the advantages of Indian service generally might be far more fully set forward, in General Orders, than at present is the case,* with a more complete statement regarding the military clerkships and other appointments on the "Unattached List," which are open to non-commissioned officers and soldiers, together with the advantages in promotion, pay and pension which follow.†

10. To make the responsibility to be assumed by the State really efficacious, it would have to be arranged to alter the system under which soldiers are now discharged, and to retain them under discipline, until they are actually provided with employment, or until they have arranged their plans for the future, either at the district centres to which they might be returned for discharge, or in connection with the agency which may be created, and which would necessarily have a military character.‡

11. Soldiers from India are now, on arrival at Gosport, Woolwich or Netley, discharged with all convenient speed, so soon as their papers are completed; and, with various sums of money in their possession, they are exposed to temptations which are frequently irresistible, so that too many of them reach their homes in an impoverished condition, or drift helplessly in search of work, which, if their characters were established, and the State assisted them, they need but slight help to obtain.§

12. It is of great importance that the State accept full responsibility in regard to soldiers who, during Indian service, and, no matter after how short a period, are rendered unfit by the effects of climate, or by accident, for further military service. The provision to be made for such men, (excepting in the case of incurable disease,) can, if the agency to procure employment advocated is established, be arranged without further expense to the public, than that caused by their retention in England, until their restoration to a condition of comparative health makes it possible for them to take up such light work as is performed by the Commissionaires.

13. If therefore the principle of State responsibility in regard to

* See Horse Guards' G. O. 1st August 1883.

† Unattached List.—Bengal Army Regulations, Section 26.

‡ The machinery already exists by which the retention of men after completion of their period of service may be arranged, inasmuch as the "competent military authority" may grant permission to non-commissioned officers, or, in *very special cases only*, to private soldiers of good character to remain in the service, on the terms mentioned in Section 85, Army Act of 1881, such conditions being that the soldier may afterwards leave at any period after giving three months' notice to his commanding officer. He remains liable, like any other soldier, to be invalided and discharged as unfit at any time. According to paragraph 92 of Section XIX, Queen's Regulations, the officer commanding may diminish this period, if it is to the interest of the soldier, or it may be dispensed with altogether, *vide* paragraph 253.

The "competent military authority" in this case is a soldier's commanding officer, who obtains approval from the Adjutant General to the Forces.

To allow of full effect being given to the provisions of G. O. No. 79 of the 1st June 1884, it seems desirable that the discharge of soldiers returning from India be in future carried out at depot centres.

§ The Savings Bank balance of soldiers obtaining pension might be remitted to the battalion depot centre, and continue in the Government Savings Bank for say twelve months after the men are discharged, to enable them to get settled.

obtaining employment for the soldier on discharge be accepted, it merely remains for consideration what contract can most advantageously be made with him to induce him to prolong his service in India.

14. Soldiers may enlist for long service, *i.e.*, twelve years army service, or short service, *i.e.*, seven years army service, and five years reserve service,* though for the present, with certain exceptions, all enlistments are made for short service. It is proposed that all soldiers of good character, who are serving in India, be permitted, on the recommendation of their commanding officers, to extend their service with the colors to twelve years, instead of ten, during the last year of their army service.

15. Soldiers of good character who are physically fit are, on the special recommendation of their commanding officer, permitted to re-engage during their twelfth year of service, in order to complete 21 years service for pension : it is proposed to make this rule general for service in India. The existing special conditions under which non-commissioned officers may extend their short service or re-engage, to remain undisturbed.†

16. It is proposed that in the case of soldiers in India *who have re-engaged*, service in India calculated from date of landing in the country shall count in the proportion of three years for four years towards pension, but no period short of three years to so reckon. The service thus computed to count as service in the rank in which the service was actually performed.‡

Service in India to be similarly calculated as qualifying for the medal for long service and good conduct, and also for good conduct pay.

17. Deferred pay may now be issued to a non-commissioned officer not under the rank of sergeant, who may have elected to serve for 21 years, after the completion of twelve years of army service ; it is proposed to make the issue of deferred pay in respect of prolonged service applicable to all soldiers who may re-engage for service in India up to the limit of 21 years.§

18. Another concession which will operate favorably towards the improvement of the physical and moral condition of our soldiers, and give exceptional popularity to service with battalions located in India, is the indulgence of furlough to England, which it is suggested might be granted in each year to a percentage of soldiers during the summer months, and after the ordinary drill season in India. *Soldiers after re-engagement, or after a continuous residence of ten*

* Section XIX, paragraph 20, Queen's Regulations.

This service is converted into eight years army service and four years reserve service, if the period of army service expires while the man is serving abroad.

† Army Act 1881, sec. 84.

Paragraph 82, section XIX, Queen's Regulations.

‡ Royal Warrant, 1882, Article 574.

Relating to service on the west coast of Africa.

§ Royal Warrant, 1882, Articles 902—907.

Articles 645, 646.

years in India, might be eligible for such indulgence, the boon carrying with it the grant of a free passage to England and back, with full pay; and the period of furlough counting as service towards pension, deferred pay, &c.*

19. The presence in England of furlough men of good character, speaking well of Indian service, would add greatly to the popularity of the army, while the indulgence of furlough, which would only be granted to men of unexceptionable character, would be an incentive towards good conduct with all ranks. Furlough men might be required to present themselves at depôt centres for duty before the commencement of the Indian trooping season, and might be associated with the young soldiers composing the drafts for their own battalions in India who would thus come under their influence. Furlough men would also be available when necessary to take up lance rank on board the troopships in which the Indian drafts are conveyed.

20. In lieu of furlough to England, soldiers who do not elect to avail themselves of this privilege, or do not fall within the 2 per cent. of strength to which it is proposed to be restricted, might be granted a bounty of £20 to be paid to them with their deferred pay when they pass to pension.†

21. It is not overlooked that in proposing to extend the service of soldiers and in granting them furlough to Europe, they may contract marriage, especially while at home. In such case they might be brought on the married roll, provided that permission under the regulations has been obtained from the commanding officer, or from the officer commanding the battalion depôt centre.

22. If the changes above advocated be accepted, the following are the more prominent ways in which they would operate:—

- (i). A soldier on completion of 14 (a) years army service, of which 18 years have been spent in India, would be eligible for a medal for long service and good conduct.

* It is estimated that if this indulgence be granted to 2 per cent of strength, approximately two men per company will be eligible for furlough in each year, making with the addition of one Sergeant and one Corporal per battalion, a detail of eighteen men to proceed from each battalion, and a total strength of some 1,200 soldiers in India, who in each year would pass the summer months on leave in England.

This strength could be accommodated in one troopship, but as, under these proposals, there would be a very considerable reduction in the drafts annually brought out, and in the time-expired men returning home, it is anticipated that, as compared with the arrangements now obtaining, no additional voyages or expense would be necessary.

† Article 694 Royal Warrant of 1870, allowed a gratuity of £5 in lieu of furlough at certain foreign stations; the amount now proposed includes a more appropriate compensation in lieu of passage and inland transit.

(a) Service at home say	...	...	...	1 year.
Service in India	...	...	...	18 "
Indian Service $\frac{1}{4}$	...	...	...	4 "
Total	...	...	...	18 years.

- (ii). A soldier of 16 (b) years army service, who enlisted at 19 years of age, and who has served 15 years in india, would at 35 years of age be entitled to pension (e) according to the rank he holds.
- (iii). A private soldier of 16 years army service, passing, as above explained, to pension at 35 years of age would, in addition to a pension of one shilling (d) a day for life, be entitled to a cash payment of £68 (e) if he had not taken furlough, or £48 if he has done so, plus the amount of his Savings Bank deposit. A non-commissioned officer of the same length of service would be entitled to a pension varying from 1s. 3d. to 2s. 9d. a day according to his rank and continuous service as such.
- (iv). Soldiers discharged at so early an age as 35 or 36 years, would, as enrolled pensioners, be a great acquisition to the second class army reserve.

23. A summary of the more important changes which these proposals will necessitate in the Royal Warrant of 1882, is annexed as Appendix A.

24. The chief thought underlying this paper is briefly that, whereas it is not possible to raise the daily pay of the soldier in proportion to the continually increasing rate of wages in the labour market, the conditions of service should be so arranged that a military career shall not disqualify a soldier of good character from competing successfully in civil life at its conclusion, State aid in obtaining honourable employment being afforded.

In order, however, that the disqualification under which old soldiers now enter civil life may not exist, the habit of labor should be maintained

(b) Service at home say ...	...	...	...	1 year.
Service in India ...	...	...	...	15 "
Indian service $\frac{1}{2}$ ...	...	...	...	5 "
Total				21 years.

(c) *Maximum pensions—*

				s.	d.
Sergeant Major	...	...	...	4	6
Staff Sergeant	...	...	...	2	9
Color Sergeant	...	...	...	2	6
Sergeant	...	...	...	2	3
Corporals	...	...	...	1	8
Private and Gunner	...	...	...	1	1

G. O. Recruiting, 1st August 1883.

(d) Minimum pension	...	...	...	...	8d
4 Good Conduct Badges	...	...	...	...	4d
					1s.
(e) Deferred pay 16 years @ £3 each=	...	...	...	...	£48
Compensation in lieu of furlough (para. 20)	...	...	...	...	20
					£68

during the prolonged service in contemplation. Existing regulations in India fully provide for the employment of soldiers on public works—for their instruction in trades—and for their moral and intellectual improvement generally, and more attention should be paid to these matters in future.*

25. The assumption throughout is also, that men who are permitted to secure the benefits which Indian service thus outlined will hold out will be men of acknowledged good character; and to secure this, it must be arranged, that in the cases of soldiers of bad character, the exercise of the authority referred to in Section XIX, Part IV, paragraph 166, Queen's Regulations be unhesitatingly resorted to, in order to effect their discharge from the service. With such advantages as are now proposed, all recruits might reasonably be required to read and write, and to furnish a certificate of character on Army Form 166.

26. In conclusion, the solution of the problem "how to obtain British soldiers for service in India" can only be satisfactorily arrived at if the three principal departments of the State (the War Office, the Treasury, and the India Office,) responsible for the administrative and financial arrangements under which the establishment of European troops in India is maintained, act in concert, and deal with the questions involved as really appertaining to the policy of the Empire, any minor points of difficulty which may arise not being allowed to stand in the way of a reform of so important and pressing a character.

E. F. C.

Simla, 14th August 1884.

* Bengal Army Regulations, Section VIII, paragraph 238 :—

"When soldiers are employed on permanent military works, public roads, special duties at sieges, and other military works required by Departments of the Army, they are granted working pay, in addition to their ordinary military pay."

APPENDIX A.

SUMMARY OF THE MORE IMPORTANT CHANGES WHICH THE FORE-
GOING PROPOSALS NECESSITATE IN THE ROYAL WARRANT
OF 1882. [ARMY REGULATIONS, VOL. I, PARTS I
AND II, PAY AND NON-EFFECTIVE
PAY.]

Add to Article 547—

547 (a). Three years service or upwards by Europeans in India, who have re-engaged in order to complete 21 years service, shall count in the proportion of three years for four towards pension, or for the purpose of fixing the rate of pension, but no period short of three years shall so reckon. The service thus imputed shall reckon as service in the rank in which the service was actually given:

Add to Article 647—

647 (c). For the period during which a soldier in India of any rank has re-engaged for a second period of service, and service in India, shall count in the proportion of 3 years for four towards deferred pay, provided that no period short of three years shall so reckon.

Add to Article 648—

Non-commissioned officers in India are exempted from the operation of this rule, *vide* Article 647c.

Add to Article 902—

902 (a). In estimating the period of service after which a medal for long service and good conduct shall be awarded, three years of service performed in India shall count as four.

Add to Article 916—

916 (a). In calculating the periods of total service, as defined in articles 918, 918-1, 918-11 and 919, three years of service performed in India shall count as four towards the acquisition of good conduct badges.

Add to Article 772—

772 (a). Soldiers re-engaging in India for a term of 21 years, and who have served in India for ten years continuously, shall be eligible for the indulgence of furlough to England, between the conclusion of one trooping season and the beginning of the next, with the grant of a free passage to and from England, and full pay while on leave; or shall be allowed a gratuity, in lieu of furlough, amounting to £20; the issue of such gratuity, however, shall be deferred until they complete 21 years service.

APPENDIX B.

Return showing the aggregate deficiency or surplus of non-commissioned officers and men in the British Army in India, on the under-mentioned dates.

ARM AND PRESIDENCY.		1st July 1879.	1st July 1880.	1st July 1881.	1st July 1882.	1st July 1883.	1st July 1884.	REMARKS.
Cavalry	{ Bengal ...	135	24	35	78	231	135	The figures with the * sign before them indicate a surplus.
	{ Madras ...	*9	37	*12	32	62	*64	
	{ Bombay ...	101	11	14	24	57	24	
	Total	227	72	37	134	400	105	
Artillery	{ Bengal ...	82	*204	*38	26	12	
	{ Madras ...	*100	*55	*83	*142	*25	*2	
	{ Bombay ...	135	135	*78	*38	61	62	
	Total	117	*124	*199	*154	36	72	
Infantry	{ Bengal ...	862	789	167	1,005	3,337	2,958	
	{ Madras ...	190	*12	280	74	769	120	
	{ Bombay ...	*43	833	956	400	934	931	
	Total	1,009	1,660	1,403	1,479	5,040	4,009	
Grand Total of deficiencies		1,353	1,608	1,241	1,459	5,476	4,186	

APPENDIX C.

Return showing the number of men of the British Army in India who have re-engaged or extended their service during the last five years.

ARM AND PRESIDENCY.		Numbers re-engaged to complete 21 years service. (Section 19, para. 82, Q. R.)						Numbers of short-service men who have extended their service. (Section 19, para. 79, Q. R.)					
		1879	1880	1881	1882	1883	Total.	1879	1880	1881	1882	1883	Total.
Cavalry	Bengal ...	32	38	31	75	23	199	24	19	...	18	267	328
	Madras ...	1	25	3	11	13	53	...	...	...	7	100	107
	Bombay ...	7	7	...	3	3	20	1	...	...	2	68	71
	Total	40	70	34	89	39	272	25	19	...	27	435	506
Infantry	Bengal ...	297	464	309	301	145	1,516	313	187	142	131	3,252	4,025
	Madras ...	102	160	149	132	55	598	39	42	40	67	921	1,109
	Bombay ...	75	79	75	67	34	330	53	79	74	120	869	1,195
	Total	474	703	533	500	234	2,444	405	308	256	318	5,042	6,329
Grand Total		514	773	567	589	273	2,716	430	327	256	345	5,477	6,835

No record exists of the numbers who have re-engaged, &c., in the Royal Artillery.
859 men have taken their discharge in India, during the past five years, with or without pension.

APPENDIX D.

NOTE REGARDING AN AGENCY ESTABLISHED UNDER REGIMENTAL
ARRANGEMENTS TO OBTAIN EMPLOYMENT FOR
DISCHARGED SOLDIERS AND
PENSIONERS OF THE
BATTALION.

During the time I commanded a battalion at home, we had a regimental agency for obtaining employment for discharged men.

On discharge, a soldier, if of very good character, was permitted to enter his name as a candidate for civil employment, and his qualifications were minutely recorded as well as his habits, temper, state of health, &c., and all that was known about him. He either went to his own home, or remained in the town where the regiment happened to be quartered.

In the latter case, he was provided with respectable lodgings, for which he paid 3d. a day. Married men had to pay more according to the number of their families. We never had any difficulty in procuring suitable quarters for these men. Small furnished houses accommodating several men each, or lodgings of the description used by the militia during the annual training, were engaged, and the difference of cost between the actual rent, and the sum paid by the men, was defrayed under regimental arrangements from funds at my disposal. These lodgings were continually visited by myself, officers of the regiment, and the sergeant major; and men were only allowed to remain in them on good behaviour. The advantages were too great for men to misconduct themselves, and as only men of really good character were admitted into them, there were seldom any complaints from the landlords. The police always spoke well of the behaviour of the men, and I do not remember that any one of them ever was brought up into a Police Court for any offence. Living as they did in the town close to where the regiment was quartered, they came, of course, constantly under the notice of the officers and the non-commissioned officers.

At Aldershot we were unable to obtain suitable accommodation, and so, while the regiment was quartered there, that part of the system had to be altered, and the men were obliged to go to their own homes, till such time as work could be found for them.

A very great proportion of these men soon found work for themselves in the neighbourhood, their employers almost always referring to me before engaging them.

Many men of good education obtained admittance to the Corps of Commissionaires, and much assistance was given by the Pensioners' Employment Society (I think that is the correct name of the Society) in Cockspur street, Pall Mall.

Every man who went to his own home was provided with a certificate stating his qualifications, &c., and authorizing a reference to the regiment; and I think I may say that there was seldom any difficulty in procuring suitable employment for the men, especially if they were acquainted with any trade. A great number of men were engaged as caretakers, watchmen, and for such like occupations.

The machinery when once started gave very little trouble or clerical labor, and the results were very satisfactory. Men were encouraged to behave well, so as to obtain employment on discharge, and it was absolutely necessary for the commanding officer to be most scrupulously careful as to the men he entered on the rolls for employment, or the system would be brought into disrepute.

When the regiment went over to Ireland, changes were necessary. Lodgings and accommodation could not be found, and the majority of the men could not have remained under any circumstances ; but certificates were always given to those who desired and deserved it, and every means were taken to procure them employment. I should have added that rolls of men wanting employment were sent to the officer commanding the Dépôt Companies, and many men were thus provided with occupation in the regimental county.

Funds were required, of course, but if they are not available, much can be done at the cost of trouble and a little clerical labor only.

I of course have only alluded to men discharged with pension, or at their own request, after expiration of first period of service, and not to Army Reserve men. After a long experience, I think I may say that I seldom found any difficulty in procuring occupation for good, and deserving men, and that employers of labor were glad to get them ; but now, of course, when so many more are annually requiring employment, no private or regimental agency could possibly procure it for them all. If Government accept responsibility in the matter of obtaining employment in civil life for soldiers who have served meritoriously, it cannot fail to be of the very greatest benefit, not only to recruiting, but also in raising the quality of the men we shall be able to obtain. Every thinking soldier must hope that success will attend the endeavour to get the matter considered.

III.

EMPLOYMENT OF NATIVE SOLDIERS AFTER MILITARY SERVICE.

The following summary of suggestions, regarding employment for pensioned native soldiers, is submitted for consideration, in connection with correspondence relating to the subject.

It is acknowledged that some increase to the daily pay of the native soldier, or else some equivalent improvement of his position, in the form of permanent accommodation, rations, clothing or half-mounting, &c., must very soon be made, and that it is advantageous to consider the question of the unequal payments made to the native soldier, and to the daily laborer, throughout India, during a period of peace. If by passing soldiers into the civil departments of the State, continuous Government employment can be held out to the recruit, it is thought that a solution may be found for the problem regarding the formation of reserves for the Native Army, and that a revision of the existing pension rules may be made, which will add to the efficiency of the army, without increasing non-effective charges. Further, it is held to be desirable, during the prolonged service for which native soldiers are enlisted, to supplement daily pay by working pay, under the provisions of Bengal Army Regulations, section VIII, para. 238, by arranging to employ soldiers, whenever possible, individually, as well as collectively, upon public works.

The following proposals are made :—

I. That after 20 years' service in the army, a non-commissioned officer, or a soldier after 15 years, if he is of acknowledged good character, and is pronounced physically fit for further active employment, be held eligible for transfer, at his own request, to the civil departments of the State, such as State railways, canals, the departments of Opium and Salt, &c., in such position as he may be qualified to occupy.*

II. That service in such departments be held to qualify for pension, which might be given to a non-commissioned officer after 28 years of continuous Government service in military and civil employment, and after 22 years to a private soldier thus transferred, the amount being proportionate to the full pension now given after 32 years service com-

* The registration of the names of men desirous of availing themselves of such opportunity, might be made one year previous to the conclusion of the necessary military service.

pleted in the ranks, and the charge being adjusted between the military department and the civil department concerned.*

III. That native officers be similarly held eligible for transfer to employment in civil departments after 25 years of military service, and on parallel conditions.

IV. That until finally discharged with pension, all men transferred to employment in civil departments, remain liable to embodiment under conditions similar to those which apply to the 2nd class army reserve of the British army.

V. That soldiers invalided after 15 years, under existing regulations, be divided into two classes—

(a.) Those whose health has completely broken down, and who being held to be incapable of further work, are passed to pension.

(b.) Those who, though unequal to further military duty, can yet perform light work, in the positions held by chuprassis, post office messengers, and other subordinates in the various departments of Government. To such men a reduced pension might be allotted, when positions can be secured for them, by means of the agencies proposed, and, after further faithful service in a civil department of the State, they would pass to a proportionate pension, or continue to serve for a maximum pension for which they might be held eligible, after a period of not less than 10 years of employment in a civil department, but which would be less than that given to men liable to be embodied for the defence of the Empire.†

It merely remains to mention two matters, which have recently come under consideration, in connexion with the idea of adding to the popularity of the service :—

I. It is thought possible for Government to arrange that all Native officers who are in possession of the Order of British India, or of the Order of Merit, be accorded a Durbar seat in the provincial Durbar of the province to which they belong.

That other Native officers, after a certain number of years' service, be granted a seat in the provincial Durbar, if recommended by the Commander-in-Chief.

That such privilege be continued to Native officers when they pass to pension.

That all Native officers, of whatever rank, be granted seats in the Durbars of Commissioners, in the districts in which they reside.

II. That priority of hearing in civil suits be given to sepoy, who, when on leave, present their leave certificate to a magistrate in Court.‡

E. F. C.

SIMLA,

25th September 1884.

* *Vide* Proceedings of a Special Pension Committee assembled at Delhi in January 1876, and letter No. 1116-Camp, from A. G. to Secretary to Government, Military Department, dated Fort William, 14th February 1876.

† A suggestion has recently been made to employ old soldiers in the police department to work telephones in cities in connection with police distribution; also to protect railway goods sheds, and to guard railway crossings, &c.

‡ Military Department No. 619C, dated Fort William, 28th November 1883, to the Adjutant General.

Extracts from a letter to Major General Sir Charles Brownlow, K.O.B. Assistant Military Secretary, Horse Guards, dated 19th September 1884.

We have reached a stage in the history of the Native army when, in consequence of the singularly unequal payments made to the sepoy, and to the daily laborer, it has become necessary to consider the question of improving the position of the soldier. The initiative has been made in the form of an organised effort, on the part of officers serving with native regiments, to secure employment for pensioned native soldiers, and a general scheme for this purpose is being worked out by Brigadier General Hudson, who is in communication with Major General Sir H. Macpherson, and with all commanding officers. The idea is, that agencies may be formed at Lahore, Lucknow, Allahabad, &c., and that local governments will, under the orders of the Government of India, encourage the admission of pensioned soldiers into subordinate positions in State departments, and in rural districts, where clerical skill and educational qualifications alone are not of first importance. The question, however, embraces :—

I. Addition to the daily pay of the soldier himself, or some corresponding advantage, in the form of permanent accommodation, or the issue of rations.

II. An alteration of the pension rules.

III. The idea of a reserve for the Native army.

I am happy to think that the idea of feeding the State railway service, the canal department, and the departments which deal with opium and salt, by drafting into them soldiers of established character, meets with favor, not only in the departments concerned, but with the Government of India. If the idea of allowing British soldiers of the 2nd class army reserve to reside in any part of the empire be accepted, we shall again be able to offer to men who have selected a military career in India, the chance of honorable employment when they pass to pension, and a career in civil life in this country. The certainty that the ability to hold the country, as we have so long done, depends very largely on the presence, in every part of India, of Englishmen in every class, who, whatever their position or employment, recognise that they have an individual responsibility in maintaining the British rule in India, is a matter of history. I send you a copy of a letter addressed by me to Hudson, which I am anxious to submit for your consideration. The idea of establishing a permanent reserve for the native army, must be approached without bias or favor of any particular system; and if the discussion of this subject has been long delayed, we have, I think, gained something of experience through its postponement. It is now generally accepted that the native soldier cannot be persuaded to adopt reserve service on exactly the same plan as that which is suitable in Europe, with an army enlisted for short service, with the very idea of creating a large reserve army. We do not desire to reduce the length of service of the native soldier, and our reserve must necessarily be a reserve corresponding with the 2nd class of the British army reserve. It may be accepted also that native soldiers who have completed their

period of service in regiments, will not, for the sake of a retaining fee, which must necessarily be very small, consent to resume military duty with liability to serve across the frontier, or beyond sea; nor are they the sort of men we should require to feed the fighting line. They would return as grumblers, and of all things, when war is to be entered on, we should require men to join the regiments that are for service, with enthusiasm! If, however, we are content to establish a system of continuous government employ, and to pass men from the army into the various departments of the State, placing them not only in the very lowest grades, but in all positions, we may establish a contented body of Government servants in every province, retaining, to some extent, the associations of their previous military history, trained to bear arms, and distinctly loyal to the State.* That such men can be readily embodied, and can be made available for the protection of railways, of public buildings and property in large stations, and can relieve the troops of the fighting line, will, I think, be accepted. Their introduction into the Government service must prove a measure of increased security, and would render enlistment popular, as a means of entering State departments. The fighting line in India must, I think, at all times be fed by direct enlistment, or by the police. If it is remembered that all our battalions are intended to be on a war footing, held ready for service, this seems a reasonable conclusion.† In regard to the police, we could, there is very reason to believe, lay our hands upon from 8,000 to 10,000 men, who are now on the rolls of the police in the Punjab, the North-West Provinces and Assam, men who are partially trained, and are accustomed to many duties of a quasi-military character. We might draft these men into the army at a day's notice, without materially affecting the efficiency of the Police Force, the popularity of which has always increased, in proportion as it has been given a military character. If we need new regiments of cavalry, or additional battalions, many men who have removed their names, after comparatively short service, would resume military duty for a particular campaign.

Copy of a letter to Brigadier General J. Hudson, C.B. Commanding Mooltan Brigade, dated Simla, 17th September 1884.

I understand that several commanding officers make objection to a systematic plan for passing native pensioned soldiers to employment, on the ground that the nature of the situations which it may be possible to secure, will not be such, as it is suitable for soldiers to accept, and that "service" in any form, after they have belonged to the honorable profession of arms, will be looked upon as derogatory; and that instead of adding to the popularity of the service, by the course which is proposed, in creating agencies to obtain employment for pensioned native

* The experience which many of our native soldiers, who are landowners, or cultivators, possess, makes them, in a remarkable degree, fitted for employment in the Agricultural Department, and other special branches of Government service connected with the canals, &c.

† Battalions in India must at all times be maintained at their full service strength, and do not need to be immediately increased when placed on a war footing

soldiers, we shall draw into the army recruits, different from those who now join our regiments, because of the honor which attaches to military service. If the propositions which you and others have now under consideration, are thus regarded, the great purpose of establishing the principle, that honorable and remunerative work is the best reward which a country can offer to soldiers who have served meritoriously, may be defeated; and I venture to put forward, for consideration, the very great importance of carrying with us, in our labors, not only the officers who are serving with native regiments, but the native officers, non-commissioned officers and men of the regiments themselves, their belief in the efficacy of a scheme by which they may, to the end of the chapter, remain in honorable employment, being essential to success.

It is apparent that the question raised by a consideration of the unequal payments made to the soldier, and to the daily laborer, involves those of increase of pay, or of some substitute for such increase, in the form of permanent accommodation, issue of rations, or other remuneration, that it must also necessitate a re-consideration of the pension rules, and bring prominently forward the idea of reserves for the native army. If, however, the main principle I have already enunciated be accepted, and there is an unanimous opinion expressed by the officers of the army, and by the army itself, in support of the idea that work is honorable, and that the soldier may be rewarded by employment, we shall have cleared the ground for a consideration of the more difficult questions, which, believe me, the Government is quite prepared to deal with, and will be anxious to dispose of during a period of profound peace, rather than when we may be on the verge of a great war.

I look forward to the establishment of soldiers, both European and Native, who have performed meritorious service (for whatever period may be determined on) in subordinate positions throughout the State departments under the Government of India, and I anticipate that we shall not only obtain for native soldiers such positions as *chuprassis*, but that, provided they have the necessary knowledge, we shall secure for native officers, non-commissioned officers and soldiers, places of trust, throughout the State Railways, canals, Government post offices, Opium department, and many other places where, when the frontier is threatened, and the active army is in the field, they may add to the confidence with which the Government must necessarily leave large tracts of country, and long lines of Railway, unprotected by organised military bodies.*

A suggestion is now being made to allow the second class army reserve of the British army to reside in any portion of the empire; such soldiers are pensioners, and native soldiers, after service, would stand on the same footing as the second class army reserve of the European army.

In considering the question of reserves, it appears to me that the only way in which natives will understand their obligation to bear arms, after they quit the active army, is by the introduction of a regular plan of embodiment for pensioned soldiers who remain in Government service. I am nearly satisfied that we cannot create an efficient reserve

* It follows, that opportunity for attaining to any necessary educational test, or other special qualification, will be afforded in the service, and will become a part of regimental training.

of men who will be content, in consequence of a small retaining fee, to re-submit themselves to the restraints of actual military service in the fighting line of the army, with liability, by rejoining their regiments, to have to cross the frontier, or travel beyond sea ; but by retaining men in continuous Government service, and in passing annually from the army to such departments as I have named, soldiers of established character, and tried intelligence, we shall have at hand, and under the direction of officers of the Government, a large number of Government servants trained to bear arms. These may be easily embodied under any arrangement best adapted to departmental efficiency. The formation of a reserve for the native army involves a considerable increase to the establishment of British troops, but the introduction of a plan by which our railways and canals, and other public services, in which clerical skill is not required, shall be fed by native soldiers, of tried character, will give us a real strength, and result in the fighting line being maintained by an honest desire on the part of the fighting classes to enter the army, as not only the most honorable, but as the most profitable profession, with reference to advancement under Government.

In indicating the position of chuprassee, as being suitable to the native pensioned soldier, we have clearly aimed too low ; and I believe you will find it a good plan to place no limit to the ambition we may entertain for our men. An extension of frontier railways may give us a military railway service, in which our duffadars and havildars would be station masters, and our native officers compete with staff sergeants of British regiments for appointments in the traffic department. Branches of our canals may be controlled by native officers, assisted by more than one old soldier, in lucrative posts. Specially qualified soldiers may become superintendents, in any department dealing with such very valuable products as opium and salt ; and there are many other ways in which soldiers, and particularly cavalry soldiers, Sikhs, or others, who are land-owners, may bring far more valuable experience to assist the State than can be offered by those who have had a purely school and college training. I have written at inexcusable length, but I hope that what I have urged may assist you in meeting some of the many objections which you doubtless receive to a general scheme for passing men to employment. I think there will be very little need of funds, when once the agencies are started, and that efficient Government support will establish your scheme, on a footing that will practically make it self-supporting. If the idea of taking one day's pay from the officers of the army does not commend itself, I think it might be abandoned,—at least in working for the British service, I have found that the notion of a subscription has raised a ghost ; and I have said it is a matter of no importance whatever.

The great thing appears to me to be to persuade commanding officers, and regimental officers, to look at the question as one of imperial importance, and to set aside any purely regimental consideration, when they have it under discussion.

If the army does not lay claim to employment in the civil departments of the State, it will, in a very few years, be quite impossible to obtain either land or money reward, or any honorable position for an old soldier in India.

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United Service Institution of India.

NOTICES.

EXTRACTS from the PROCEEDINGS of the Executive Committee of the Council assembled at Simla on the 5th May 1885.

A New Patron.

The Secretary announces that in succession to the Most Noble the Marquis of Ripon, His Excellency the Right Hon'ble the Earl of Dufferin, Viceroy and Governor-General of India, has consented to become Patron of the United Service Institution of India.

The Annual Meeting of the Council.

With the sanction of the Council, the date of the Annual Meeting is changed from the 1st June to the 1st October, the former date having been found by experience to be inconvenient.

Change in the Constitution of the Council.

Lieutenant-Colonel Combe having become a Member *ex-officio*, in place of Col. Chapman, who has vacated the appointment of Military Secretary to H. E. the Commander-in-Chief, the vacancy is filled by the nomination of Col. Bushman, C.B., Assistant Adjutant General, at Army Head Quarters.

Occasional Meetings at the U. S. I.

With the sanction of the Council an attempt will be made during the present season to institute a series of Réunions or informal gatherings which will be distinct from the ordinary course of Lectures, and will be open only to Members and their personal friends. These Réunions will be held, as far as may be found practicable, under the following conditions :—

- 1.—The meetings will be devoted to the discussion of such questions of professional interest as cannot conveniently form the subject of Lectures.
- 2.—The meetings will take place once a month or, if possible, oftener, and the proceedings will open at 9-30 P.M., the senior officer present at that hour taking the chair.
- 3.—Admission will be free. Each Member will be allowed to introduce one friend.
- 4.—Some five or six subjects will be accepted for discussion at every meeting. When a member is desirous of bringing forward a question at any particular Réunion, it will be understood that he is prepared to introduce it to the meeting with a few preliminary remarks. Notice of the subject to be discussed, and the gist of the introductory remarks should be communicated beforehand to the Secretary.

- 5.—The Secretary, under the orders of the Executive Sub-Committee, will have power to decline the acceptance of any subject for discussion, without necessarily stating any reason for doing so.
 - 6.—A subject having been brought forward at a Réunion, and the introductory remarks having been duly delivered, a general discussion will follow; all questions as to priority of speech, &c, being decided by the officer in the chair.
 - 7.—Papers by absent Members, or *Communiqués* from Heads of Departments, &c, on which opinions are desired will be accepted and read by the Secretary.
 - 8.—The MS. of the introductory remarks upon each question mooted will be left in the Secretary's hands, and notes will be taken of the discussion for record and, if approved, for publication in the Journal.
- Timely notice will be given of the first Réunion, and any additional information can be obtained by applying to the Secretary.

By order,

O. E. WHEELER, LIEUT.,

Secretary, U. S. I. of India.

SIMLA, *May* 1885.

The Journal

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No. LXII.

Wednesday, September 24th, 1884.

H. E. THE COMMANDER-IN-CHIEF, in the Chair.

SOME MILITARY CONVENTIONS.

By Colonel G. CHESNEY, R.E., C.S.I.

YOUR EXCELLENCY, LADIES AND GENTLEMEN,—I would begin by expressing a doubt whether it is not rather a military convention under which it is supposed that military men, at any rate military men up here, desire to be lectured to on military subjects. Certain it is that you will often find that people care least to talk about what concerns them most. A friend of mine told me that he went to stay with a great mathematician, but entirely failed to get any mathematics out of him in the way of conversation; his head was running all the time on playing the violin. I remember once at a big public dinner, "Grand Day" at the Temple, sitting next a distinguished lawyer. I naturally desired to seize the opportunity to pick up a few legal crumbs from him, but I found he would talk about nothing but fox hunting. So it may be with military men, especially here, where they come to seek distractions for a while from the business of their profession; while as regards the more serious military officials of the place, a lecturer who attempts to lay down the law to them on any military subject must always have an uneasy feeling that they know all about it already. However, this lecture is an old engagement, and the subject which I propose to offer for your consideration, "Some Military Conventions," is one that admits of being regarded from more than one point of view, and so may be found of interest as suggesting ideas which may develop into useful germs in the minds of others.

I may notice, by the way, that one common military convention is the conventional way we have of forgetting all about those conventions in our military history in which we have not come out very well. Thus, for example, we have all a more or less distinct impression of the

Convention of Cintra, which, if not very creditable to the intelligence of the general, was the result of very creditable behaviour on the part of the troops. Also of the convention which followed out of the expedition to Egypt in 1801, when the surrender of the French Army was as creditable to the foresight and political courage of those who planned the expedition, as the events that brought about that surrender were honourable to the British Army, which, landing on an open beach in broad daylight under a galling fire, carried the position and finally beat a superior force of the enemy in a hard-fought pitched battle in front of Alexandria. Such instances as these most of us manage to recollect, but probably very few among us, except the Intelligence Department, have any distinct impression of the Convention of Alkmaar in 1799. And yet the operations which led to it were far from discreditable to the troops concerned, although they displayed in a more than usually marked way the extraordinary bungling of the British Government of the day, and their total incapacity to conceive or carry out an intelligent plan of military operations. The force which landed at the Helder in 1799, was originally destined for the south-west coast of Holland. There was a notion that the Dutch were ready to rise against their French oppressors if they got assistance, and the British Government accordingly sent an army for this purpose, with which a considerable Russian force in our pay was to co-operate. Sir Ralph Abercromby, the most experienced and distinguished General of the day, who was placed in command, strongly protested against the proposed campaign, but was overruled by the Ministry, and being overruled, set out like a good soldier, determined to do his best. Both he and the Admiral, however, were in accord that the landing at Goree, as was originally intended, in face of the French Army and fortifications, was impracticable, and that design was abandoned, and it was resolved to land at the mouth of the Helder at the extreme north coast of the narrow spit of sand which separates the Zuyder Zee from the German Ocean. We landed accordingly, also capturing the Dutch fleet, and then proceeded to march down this narrow spit of sand southwards in the direction of Amsterdam. Of course a landing of this kind with twenty thousand men cannot be done in a day; as a matter of fact Sir John Moore had got on shore with only about three hundred men when the fleet was blown off the coast by a storm, and this, as the historian naively observes, gave the French time to prepare for us, and prepare for us they did. We advanced slowly, overcoming the increasing resistance in front as we went along; but after a series of very severe actions, in which, by the way, the British complained a good deal of the want of support from their gallant allies and stipendiaries the Russians, the further we got the more French we found and no Dutchmen to help us, as, indeed, how could they? for there was little population to speak of in this part of Holland, and the French had completely cut off the rest of the country from us. In the end, after fighting several very gallant actions and losing a great many men, the utter impossibility of getting into Holland became apparent, and to retreat in face of an active enemy being equally impossible, a convention was come to under which we were allowed to embark and go

home. One reason, perhaps, why we know so little about this campaign is because so little has been written about it; this is our conventional way of dealing with history, and not only our way but that of other nations. The French have published their "Victories and Conquests of the French Army," but no account of their defeats. We dwell on our virtues, we say little of our military faults, therein closely following the habits of private life, where, I need not say, in conversation we always discuss the virtues of our friends and say nothing of their little defects.

While on the subject of conventions, I may add that what contributed not a little to the disaster, was that the difficulty of embarking and gaining a footing on the land had just been overcome, when the gallant Abercromby, at that time our most distinguished General, was superseded by the Duke of York of whom it may be said that he was one of the most expensive Generals that the country has ever possessed. In the "Life of Sir John Moore," the biographer observes upon this change of commanders, that "it was an unfortunate measure to send the young Prince, though endowed with a warm and beneficent heart, together with a good understanding, to take the chief command from Sir Ralph Abercromby, who had been trained to arms from early life. The King's partiality to his gallant son was natural, but the Cabinet Council being unprejudiced, instead of appointing this ambitious youth to the superintendence, ought assuredly to have placed him under the guidance of the veteran General." This was the conventional way of acting and writing in those days: of course in the present day the possession of a "warm and beneficent heart" would hardly be deemed sufficient qualification for the command of an army. As to the expedition itself, the truth was that the Government at that period did not know what to do with its army, and it is only fair to say that it was rather difficult for them to find employment for it, because the French had not left much available room in Europe for operations. The consequence was that our army, of ten, fifteen, or twenty thousand strong, was for ever sailing about the ocean, trying to find a dry spot on which to land. Sir John Moore, for example, to whom the British Army owes so much, was for many months, not to say years, cruising about in this way. Before the expedition to Alexandria in 1801 took place, the troops had been cooped up in transports in the Mediterranean for months. There was a project to land on the north coast of Italy, where it was thought that about fifteen or twenty thousand British troops could free that country of the French; unfortunately while we were thinking about this, and cruising about, Napoleon crossed the Alps and won the battle of Marengo, which made it doubtful if twenty thousand British troops would be enough to turn the French out of Italy. It was with a part of these troops, which had been knocking about the Mediterranean for months and months, that Abercromby landed eventually in Egypt and fought his glorious campaign. Then again it was with a force of twelve thousand men, which had been cruising about the Mediterranean for years in various abortive quests, that Moore was sent, in 1808, to make a diversion in Sweden. It was thought that the king of that country might turn out trumps, and that here would be

a beginning for subverting the power of Bonaparte. Unfortunately the King of Sweden was a lunatic, and he showed his appreciation of our assistance by refusing to allow our troops to land, and they remained for two months in harbour on board their transports and then came back again to England. And the troopship of those days was a very different thing to what we know by that name; indeed it is difficult in these days, when the soldier is taken down by rail to the port and shot straight on board one of these splendid vessels, with everything ready provided, fresh bread and meat, and lots of medical comforts and surgeon-majors, and the date for arrival at his destination timed almost to the hour, to realise the sort of life that the British soldier of those days had to go through, cooped up as he used to be, month after month, in these wretched old tubs, fed on salt pork and mouldy biscuit, and cruising from place to place without knowing when or where he would land. And what a preparation for a land campaign, to spend month after month packed like herrings in a cask! And yet when they did find a landing place and a General fit to lead them, how well they marched and how well they fought! There were no brevets and no medals in those days, yet the standard of duty was high. But to return to my subject of conventions, how many did not the soldier suffer under. To begin the day's work for instance, by rubbing your pigtail with tallow! And then, in later days, how much the troops of all countries must have suffered needlessly from going through all their campaigns in a most uncomfortable full dress. As an example of conventional ideas on this head I may refer for a minute to a very excellent book, "Jackson on the Formation and Discipline of Armies," written in the early part of the century. The author is dead against pigtails and powder, but enlarges on the importance of the soldier's dress, both in its effect upon the enemy and the reflex impression on the soldier himself. The first object, he says, would be obtained by a large imposing headpiece (he refers to the British shako), while as a means of inspiring courage in himself and striking awe into the enemy, the soldier's head should be borne erect, to which end his neck should be encased in a stiff and lofty stock. Those of us who in our young days were the victims of that survival, little knew that we wore it in order to inspire ourselves with courage and the enemy with awe; we thought it was an instrument of torture bequeathed to the army by Sir David Dundas.

But some conventions were more useful. The other day I came across the following remark in the preface to a well-known book, "The Historical Records of the British Army": "The British soldier is distinguished for a robust and muscular frame, intrepidity which no danger can appal, unconquerable spirit and resolution, patience in fatigue and privation, and cheerful obedience to his superiors. These qualities, united with an excellent system of order and discipline to regulate and give a skilful direction to the energies and adventurous spirit of the hero, and a wise selection of officers of superior talent to command, whose presence inspires confidence,—have been the leading causes of the splendid victories gained by the British arms." When I look back upon some of the brigadiers of my younger days I cannot help

feeling that this is a rather conventional way of writing. Still conventions of this sort are very useful, if you can only get men to believe in them. But the sort of conventions I would now rather dwell on are the conventions which are open to objection. For example, there is a conventional way of writing in connection with the much-abused term 'decimation,' on which I should like to say a word. A writer, describing an action, will say the troops were shattered, in fact utterly decimated. Or again, it was said by the apologists of the General in a late very notorious case, when an immense army allowed itself to be shut up by, and surrendered to, an army not much larger than itself rather than cut its way out, that they could not help themselves, because to have made the effort would have exposed that army to the risk of decimation. The people who use the word thus glibly would appear not to be aware that for an army to be decimated means that it loses one-tenth of its numbers ; why, an army that achieves anything considerable in the way of winning a victory or saving itself from destruction, at the cost of only one-tenth of its numbers, comes off very cheap indeed. At least that used to be the idea. Now-a-days it is true, we hear of great battles being won and conspicuous bravery shown with the loss of a quite trifling fraction of the force. That, of course, is due to the good generalship displayed ; but the point I wish to remark on, is that the loss involved in decimation is so small that it would not be missed. Say that a regiment of a thousand men is decimated, that means that it is reduced to nine hundred. But how many persons are there, even military men, who can tell by looking at a body of troops whether it be a thousand or nine hundred strong ? I remember being present at the great review at Paris in 1867, held in honour of the King of Prussia, as he was then, and the Emperor of Russia, and many other great personages. It certainly was a very brilliant sight, and the newspaper correspondents put down the numbers of the troops assembled at from fifty to seventy thousand men. A friend of mine who was accustomed to count numbers, carefully counted them on this occasion, and made out about thirty-seven thousand men on the ground. And here I might remark while on the subject of conventions, what a curious convention it is which leads one crowned head who wants to show civility to another crowned head who pays him a visit, to treat him to a review as if it were the pleasantest amusement he could give him. What would be thought in private life of that kind of way of showing civility ? A gentleman with whom you are on rather a delicate footing, whom perhaps you suspect of a desire to pay undue attention to your—well, say to your aunt, comes to stay with you in your country-house, and you take him to a side-table and shew him a pair of duelling pistols, observing that you are a dead shot with a pistol ; and then, as you pass into the gallery, you take down a pair of rapiers from the wall, and you draw attention to their edge and temper, and remark by the way that you are a first class fencer. Yet this is what the crowned heads do. The review was a peculiarly appropriate civility in this case, because the French and Germans were just then on the point of flying at each other, as in fact they did three years later.

At this review there was the old King of Prussia, riding by the side of the Emperor, at the head of a splendid *cortège*, an old man even then, and Bismarck, and I think also Von Moltke, riding down the ranks, scanning the troops, taking no doubt their measure by the standard of those they left behind them in the Fatherland, and whose quality was so soon to be tested. The Parisians were in high spirits over the show, and seemed to think it conclusive evidence of their readiness to go to war; yet what a conventional way of looking at things! Even if there had been seventy thousand men on the ground, what would that have proved? To be able to collect seventy thousand men in Paris, without stores or transport, went but a very short way towards proving the superiority of the French over the Germans, or even their readiness to meet them, as indeed the event proved. As well assume that because fifty thousand volunteers are got into Windsor Park on a fine summer's day without great coats or camp kettles, that the British home establishment was mobilised and fit for active service. And yet that review led the excitable French Press, taking a purely conventional view of the thing, to comment upon their numerical strength, and their readiness for war; and that conventional way of looking at the matter, pursued further, did undoubtedly contribute to bring about the war which followed so soon afterwards. But to return to my subject: I referred to this Paris review as illustrating the difficulty of estimating numbers. It is quite evident that an army which has lost one-tenth of its numbers is practically very much as it was before; and yet you will often find writers on military history and campaigns describe troops as being so shattered by their losses to that extent as to be unable to follow up their victory. And what is more, I am told that the troops sometimes take the same view of the matter themselves, and that when a certain number have been knocked over, the remainder think enough business has been done for that day. Now, because one man is killed or wounded, why should the other nine men who have not been killed or wounded be incompetent to go on? Of course if an army has been marching a long distance before it comes into action, and then has to fight over several miles of broken country, perhaps without any food, then at the end of the long day the troops will naturally be exhausted. But battles are often fought by an army on the defensive, who hold their ground and beat off the enemy, and then why should they be too exhausted to go on and make the critical counter-advance? Why should nine, or say, even five men be exhausted, who are still sound in mind and limb, because the tenth or even the sixth man has been knocked over? Yet no doubt they are exhausted, but it is in a different way from that stated. Their imagination has undergone a shock. Small blame to them if they do feel a shock under the circumstances, but nevertheless it is those troops and those generals who achieve success, who, instead of feeling frightened because they have not been hit, turn their remaining energies to good account.

Again, a conventional way of dealing with the subject, which you will find often repeated in Alison, for example—one of the most conventional of military writers, for he was a man wholly devoid of imagin-

ation—is when they tell you of troops gaining a position slightly in advance of their original one after a gallant and determined advance of two or three hours' duration. Now what really happened was that at the end of two or three hours they had gained five or six hundred yards of ground. But clearly they could not have been advancing all this time; it does not take two or three hours to advance over six hundred yards of fairly level ground; what were they doing all this time? The historian does not tell us, but we may judge for ourselves what they were doing. Part of the time, no doubt, they were funkng, and again I say, small blame to them. I remember reading an account in the newspapers of a candidate at a county election, a youthful candidate, making his first hustings speech. The honourable gentleman, so the report went, began his speech by saying: "I take leave to remark;" having repeated this observation three times, he relapsed into silence and appeared absorbed in contemplation of the inside of his hat, in which presumably his speech was written out. Whereupon a wag below called out: "You've got more in your hat than you have in your head, gov'nor." This sarcasm goaded the unhappy orator into speech, and he retorted: "You come up here and try it yourself, you won't find it so easy." And so I feel how unbecoming it is for a man living at home at ease to find fault with those who think that they have had enough of it, because, although they themselves are unhurt, a certain number of their friends and comrades are lying stretched on the plain, smashed some of them almost out of recognition. That is calculated to try the strongest nerves. Still the fact remains that to speak of troops as spending two or three hours in advancing with determination over five or six hundred yards of ground is a conventional way of dealing with the subject, while we may be sure that the general and troops which rise superior to the conventional ideas on this head, that because a certain number of your comrades are knocked over you have done enough on that day, especially if they will only remember that going on is almost always safer than standing still, and that going back, especially in oriental warfare, is the most dangerous of all manœuvres,—those are the men to achieve great results.

In connection with this subject there is one convention which seems now-a-days to be assuming a very objectionable prominence, arising out of the study of tactics in peace time, such as is derived from autumn manœuvres and the war game. You hear now-a-days that infantry are swept away by fire from imaginary guns, that cavalry are *ecrasé*, that artillery are smashed up; in fact, just as you are going to execute your great *coup* some umpire rides up and tells you that you must go home because you are placed out of action. We must use our imagination in peace time, and to throw ourselves into the realities of war during the exercise of peace is no doubt a very useful practice. But I think we should all protest most strongly against the assumption that prodigious losses must necessarily follow from going on boldly. The heaviest losses in nine cases out of ten occur, not when troops are going forward, but when they are going back. And I think we should all protest in the strongest way against this pestilent notion that in war anything is

impossible; against the conventional side of war games and autumn manœuvres; against the convention which they teach that one set of troops is as good as another; that the moral element in war goes for nothing, and that the boldest line is not that which offers the straightest road to victory.

I should like to say just a word on one time-honoured convention which used to find currency about cavalry charging infantry squares. It was a common thing for writers about battles a few years back to describe this as actually happening, notably at Waterloo. It is perhaps hardly necessary to say to a military audience that no such charges ever take place. If a man on horseback ride full gallop against a man, or against several men, on foot, he must ride them down, whatever the consequences to himself—if he goes on. But if a man ride at a fence and do not go over it, he can hardly be said to have taken the fence; if cavalry ride at a square, and stop just before they arrive there, they can hardly be said to have charged the square. And while on the subject of conventions about cavalry I may observe that surely it must be a sort of convention under which cavalry takes precedence of infantry, and in almost all armies is dressed in a more expensive and showy uniform, as if to signify that it is the more important arm, or the one which incurs most danger. Why most of the battles won by the British army have been undoubtedly won mainly by the infantry, many have been won without any cavalry being in it at all, and except on a few special occasions the losses in infantry have far exceeded those incurred by the cavalry. Unquestionably, then, if you consider the danger of a soldier's career as entitling him to wear a fancy dress, then the feathers and the trappings should be given to the infantry, and we must admit that the way in which from boyhood upwards a sort of implied superiority is attributed to the cavalry, is either a species of convention, or it is a survival of a design under which men have to be tempted into that branch of the service. Exception, it may be honestly observed by way of qualification, may be allowed in the case of cavalry serving in India. In many Indian campaigns the losses of the cavalry have been exceptionally heavy, and the work it has performed has been extraordinarily important, as notably in the battle of Assaye, and the great Mahratta campaigns of Lord Lake, although even then the infantry suffered still more. And certainly Bonaparte did not spare his cavalry: he won the battle of Borodino with it at a tremendous sacrifice. But it may be said now-a-days that this is not war, and that the rôle of cavalry should be limited either to engaging other cavalry, or to outpost duty, and to act as the intelligence department of the army. If this be so, it is still surely a rather conventional arrangement to give all the gaudy uniforms to men acting as scouts for the army. In this matter of dress I am afraid my own branch of the service is not free from the same criticism. It is surely somewhat of a convention which puts a man into a peculiarly red coat and appurtenances and a cocked hat and feather, whose business is to dig behind trenches and burrow in mines. And to come to the sister service, as we are proud to call it, I think it must be admitted that their mode of doing business is not free from convention. Suppose an inhabitant from another planet to come down as a

special correspondent to describe the proceedings of our artillery in action. These people, he might say, bring into the field a number of heavy wagons drawn by a great number of horses laden with iron balls, and they fire these balls into the air by the thousand on the chance of their hitting somebody; they will fire as many as fifty thousand off in a morning and perhaps one in fifty may hit, and when they do hit they hurt; but so do also the small leaden balls which they send out in still greater numbers, but which are much cheaper and easier to carry about. To an observer bringing a fresh mind to the matter, this way of doing business might seem a little absurd, yet it is literally what happens. It has been computed that it takes on the average about a ton of iron to kill a man, and the only excuse is that if it kills but few, it frightens a good many more. Of course when I speak of cannon balls I am referring to the past. Cannon balls are now exploded, or rather I should say shells are now exploded in the place of them. But even in these days of arms of precision is the result much more satisfactory or unsatisfactory according to the side from which you look at it? I think even now we hear of a great many thousand bullets fired away in the course of a day, and a great many hundred rounds of shell from rifled guns which have a wonderful range and precision and low trajectory, and yet with an amazingly small result in the way of casualties. Surely, then, we may say that even in the modern way of handling artillery there is still something conventional, unless indeed we are actuated by a human desire to frighten the enemy rather than hurt him.

To pass on from arms to tactics. Every age has had its own conventions on this head, and this is the point I am coming to, that success goes with the general who disregards the conventions of his age and strikes out a new line for himself. This is what Napoleon meant when he said that a general to win should change his tactics every ten years. For example, it used to be an accepted convention that campaigns should take place only in the summer, and that in winter the armies should retire into quarters. Napoleon broke through this idea: the battle of Austerlitz was fought in December; the bloody campaign of 1806-7 in Poland was fought through the winter, with frightful losses to the French army,—still the object was gained, the adversary had no time to pull himself together, and Napoleon won. It would be a trite thing in the present day to compare the vital successes gained by Napoleon with the inconsequential character of Marlborough's campaigns. Marlborough was as great as any general that ever lived in leading an army into action and winning a battle by down-right generalship and pluck in the field. But it seems never to have occurred to him as possible to push a victory in the way in which victories have been pushed in later times. Napoleon in his turn came under the influence of convention and fell a victim to it. It is a curious thing, by the way, that through all those great campaigns in such dismal countries as Poland and Russia, the troops all marched in full dress with uniforms covered with lace and embroidery; the splendid foppery of the officer commanding the cavalry is historical. But Napoleon

himself fell a victim to the conventional notion that war should be made to support war, that if you could beat the enemy and occupy his country there was no need to get supplies from outside. This had been found to answer in Italy, Germany and Austria, but it failed in Russia, and the French army perished in consequence. Had General Grant stuck to this convention, the South would never have been subdued. But under him the American armies of the Northern States displayed the extraordinary and quite unique spectacle of huge armies fed and well fed, and thoroughly supplied, in a barren and almost uninhabited country, desolated by previous desperate campaigns. It is true that railways for the first time made it possible to feed large armies in the field at a distance from the base, and in a country where the supplies were exhausted; but it was the Americans who first showed the way to utilise railways on a large scale. Further, it was the Americans who broke through the conventional notion that the object of a campaign was to beat the enemy, drive him away, and take his strong places. Grant went further than this: he was the first to apprehend the idea that the object in war should be not only to beat the enemy's army but to capture it, and absolutely destroy it. He, in fact, rose above the military conventions on the subject which had obtained up to his time. Whether or not the Germans took the idea from the Americans, or whether they had reached the same point of development at the same time, certain it is that the Franco-German war displayed on the part of German tactics an entire absence of the conventional. In all military treatises on the art of war up to that time it was a received maxim that an army under all circumstances must cover its base. You might manoeuvre to the right or to the left, or you might go on, but you must always have your base behind you. Now, in the campaign before Metz, this maxim was discarded; the Germans abandoned their base, marched round the French army, crossing a wide river to do so, and lending their flank to the enemy at the same time. No doubt they had taken the measure of their adversary, or they would never have ventured on a movement which against troops as good as themselves would surely have been their own destruction. However, they did all this, turned round and fought the battle of Gravelotte with their backs to Paris and their faces to Germany. With what result we know. And surely to come to what followed, if anybody had predicted beforehand, that an army could surround and finally take prisoners an army almost as large as itself, with which, too, rested all the advantage of operating on interior lines, such a prediction would have been pronounced a monstrous absurdity.

Well, then, the conclusion to which I think we are brought by these considerations is, that so far from its being the proper thing to store up and apply the received maxims of the past, our aim and object should be rather to set aside the conventional rules of war, and to strike out a new path. Napoleon said that tactics must alter for the victorious general every ten years, or in other words that victory rests with him who dismisses the conventional. It sounds a dangerous canon to lay down, but it appears to be really the only

safe one. And now to apply the principle to our own case. What are the particular conventions which we ought to set aside, and what are the new lines on which our tactics and strategy of the future ought to be based, say for a war on the frontier? Well, this is a large subject to introduce at so late an hour, and were I to attempt to enumerate the conventions in our system which we might usefully get rid of, the time available would be altogether insufficient. Moreover, my ideas on the subject may have been anticipated by many here present. Some, whom I see here, are very capable of working out the idea now suggested much better than I could do; there are many here also who took an active, some a very distinguished, share in the late war in Afghanistan. It would not become me to venture to lay down the law about campaigning on the frontier to such passed masters in the art. Or perhaps some people may think that another war in that quarter is improbable. We have sent out a Commission, and the frontiers of our friendly ally are to be delimited, and a friendly understanding is to be established with her neighbour beyond that boundary. But dismissing the idea of actual operations, let us suppose, merely by way of an interesting military exercise, the case of its being necessary again to send an army beyond the frontier; let us further make the perhaps extravagant assumption of a larger army being required than the one that was collected on the last occasion, and that it has to encounter a more powerful and scientific adversary than that against which my gallant friends were engaged. What, I ask, would be, under such imaginary circumstances, the particular conditions in which such a campaign would be likely to differ from the former one; or rather, I should say, what are the particular conventions which we are accustomed to associate with military operations in that quarter which it will be necessary for us in such a case to discard? I will venture to indicate one point only among many. There is one familiar feature of Indian campaigns which has always been prominent on past occasions, and was particularly prominent on that occasion, and that is the baggage and transport. An Indian campaign, and especially a campaign in a country like Afghanistan, is associated in the mind's eye with interminable strings of mules and camels and an immense expenditure of money. Far be it from me to wish to run down the Transport Department, for such as it now is I may venture to claim a very humble share in its formation on its present footing; but I venture to predict that if our imaginary campaign is ever to take place with any reasonable prospect of success, if our war game is not to be pronounced impossible by the umpires, it will be necessary to discard all notion of a transport system such as that to which we have hitherto been accustomed.

The Afghan War cost about twenty millions, the greater part of which went in sore-backed mules and dead camels and carts that broke down. And with all that expenditure and effort, how limited was the actual result, how small the columns that were thoroughly mobilised and able to move about the country. It is true that in the future we shall have better organisation and take more care of the beasts of burden

but I would put it to you, what chance could there be of carrying out a successful and vigorous campaign such as I have indicated in my hypothetical exercise, except with a very much larger army than was placed in the field on the last occasion, and a much more mobile one? And if a larger army, then a very much larger need for transport. And to say nothing of the cost that would be involved, I think it will be apparent to those who consider the matter, that a point would soon be reached in the scale of operations when any attempt to feed and move an army in that country with the ordinary and conventional mode of transport, with the mule or camel or even bullock-cart, would break down from its own weight.

The conclusion I come to then, and which I venture to put before you is, that we should have to discard the conventional notion of supplying the army by means of animal transport; that we should have to do as the Americans did in their great war; we should have to supply the army by means of railways, and that only in this way would it be possible to do the job effectually and fully; and that, therefore, anybody working out this imaginary campaign must arrange for the construction of railways, either in advance, or simultaneously with the forward movement. Not that my friends in the Transport Department will find their occupation gone; a transport department will be as necessary as ever, and a very large one, but its functions must be limited to supplying the army actually in the front, to receiving and distributing the supplies at the point where the railway gives them off, and that point must be close up to the front. If this can be arranged, if the railway can be pushed on concurrently with the advance of the army to the point at which the troops, in sporting parlance, begin to "throw off," then that army will be properly fed and supplied, and will be capable of achieving some results; but without railways of some sort well up to the front a successful campaign in these inhospitable regions is impossible. The problem of the future therefore, I submit, is how to arrange for the very rapid construction of some sort of railway to the front, simultaneously with the forward movement of the army; the problem of the present is how to improve communications to the front up to the point from which the improvised war railway would make its start. I submit this for your consideration as one illustration of the principle which I have endeavoured to evolve. I feel that it is an imperfect and inadequate way of dealing with the subject, but I see some here whose fresh and free minds, even while I have been speaking, will have already developed ideas on the subject, with practical knowledge and experience fit to carry them out to a practical conclusion. And if the impending day of trial be deferred till some of the older ones among us have retired from the active work of life, the younger members of our community will probably have ample opportunity in the time to come for displaying that form of military genius which consists in discarding convention and striking out the new and original line which alone can tend to success.

HIS EXCELLENCY THE COMMANDER-IN-CHIEF.—I am quite sure that Colonel Chesney's interesting lecture has afforded considerable food for thought. I too am

of opinion that the days of convention are not yet over. It is only three or four years since that I had six or seven regiments under me, and I was told to take a village. I think the numbers of the regiment who held the village, a very gallant regiment no doubt, were about five, or six hundred. I was advancing to the attack according to the conventional idea when the umpire rushed up to me after one round was fired, very much scared, and said, 'you must go home you have been defeated.' Upon this I asked him 'what do you mean? I intend to lose two or three thousand men.' The umpire, however, said that it would not do, and rather than squabble, I retired. Now I do not think this would have happened in actual war. With regard to conventional writing, some of you may recollect a despatch of a very distinguished General. I am not alluding to a despatch of the general officers now present; this officer I speak of is dead. If you recollect, this general fought a battle and described his troops as being under a withering fire for two hours, but that by the blessing of Providence no one was hit! Now I think that was a conventional despatch, and that such a style of writing should be avoided. There are other important points in the lecture affording food for thought, and I am quite sure you all will join me in thanking Colonel Chesney for the very interesting lecture he has delivered.

NOTES ON DISMOUNTED CAVALRY *v.* MOUNTED INFANTRY.*

By Major F. W. HEMMING, *5th Dragoon Guards.*

Among the many changes necessitated by the altered conditions of modern warfare, as exemplified in recent campaigns, perhaps none is destined to have a more decided influence on the battles of the future, than the employment of a mounted force armed with a long ranged accurate rifle and trained and equipped in the most suitable manner for using it with advantage when dismounted.

Of late it has been the constant cry that "mounted *infantry*" is the force that is wanted and one that would fulfil all required conditions: riflemen, mounted on undersized horses (even ponies and mules have been suggested), taught to consider themselves *infantry* and not cavalry soldiers, men and horses with little or no cavalry training, small agile men, lightly equipped marksmen, able to move very rapidly to the point where their fire is required.

This, at first sight, appears most plausible; we say at once "the very people we want." But let us consider what such a force would be, whether they are really what they seem, and would they fulfil all our requirements.

In the first place, it may, I think, be taken for granted, that we could not expect to obtain, in any large numbers, men more adapted for the work, as regards physique, than our present light cavalry soldiers.

Weight of men. The weight of such men, clothed and equipped in the lightest way, carrying as little as possible compatible with the work they might be called upon to perform, and armed with a long rifle, would, I maintain, average little, if at all, less than that of our present Hussar. When I say compatible with the work they may be called upon to perform, I have in view one of the occasions on which their services would be of the greatest importance, *i.e.*, as forming part of the force covering the advance of an army through an enemy's country, the extreme edges of the outspread fan, pushed often three or four days' march ahead, and therefore carrying more food for man and beast than if accompanied by a commissariat. Ammunition, a means of picketing the horse, a cloak for the man, a blanket for the horse (if in a cold climate and billets

* The original pamphlet, written for private circulation, was dated Aldershot, 16th July 1881.—F. W. H.

The subject was then not so threadbare as at present.

not to be reckoned on), a change of clothes or a portion of them, water bottle, mess tin, spare shoes, a grooming kit of some sort; none, even of these smaller accessories, which go to make up weight, but which are so necessary to the horse soldier, could be dispensed with by mounted infantry.

If then it is the case that the mounted infantry soldier, in marching order, could weigh little, if at all, less than a light Dragoon, and knowing, as we do, that the latter are certainly not at present, mounted "beyond their weight," how can we expect to mount the former, efficiently, on under-

Forced marches, &c. sized horses, ponies or mules? To go further, the power of making forced marches, rapid changes of ground, getting through, or over, natural obstacles, fences, &c., would form an equally essential part of the programme of the mounted rifleman

as that of the present cavalry soldier; how then is he to be mounted on an inferior class of animal?

How mounted? As regards cavalry training; without its being necessary for the mounted rifleman to understand the intricacies of the cavalry "double ride" or even to work in formed bodies with great precision, yet, if his chief duties are to be those forming part of that covering screen, behind which an army rests or moves secure, impenetrable in itself, but so mobile that contact once established with an enemy, touch is never lost, if this is the case, he must not only be a fair rider, but he

Cavalry training. should be possessed of those qualities of a finished horseman which every officer commanding a cavalry regiment makes the "goal" for those under his command, and one how often not reached with the most careful training. He must combine the qualifications of a cross-country rider with those essential to the Dragoon. With a firm seat, light hands, judgment, an eye for country, his horse obedient to his every wish, he must be so completely at home in the saddle, that his

undivided attention may be bestowed on the work that he has in hand. While preserving communication with those at a distance on his flank, front or rear, and keeping a sharp look out, he should be able to choose his best line of country; possessed of the thorough mastery of the animal he rides, he must be able to halt and stand motionless at pleasure, mount and dismount with the utmost rapidity (not all such easy matters with untrained men and horses); an inability to do these, or suddenly to passage right or left, circle or rein back, might often be of vital importance in the performance of duties where it is a maxim "to see and not be seen." When dismounted, his horse must lead well, stand fire perfectly, either with reins over the firer's arm or at some distance from him held by others. Is all this to be obtained without careful cavalry training of horse and rider? I think not. The riding school and manège, the steady work in small bodies, which form the training of our cavalry recruits and remounts, are the means to this end. Further, it is generally allowed that dismounted cavalry, or mounted rifleman when acting on foot, must, in addition to the men holding the horses of those actually employed for dismounted fire, have an intact mounted support, or more properly escort. This escort, employed from the same force, of mounted rifleman, must have the

power of acting as a formed body of cavalry, and would require cavalry training to be able to do so.

The mounted rifleman must also have a good knowledge of the fitting of his saddlery, the accurate packing and adjusting, on it, of his kit, most important to all, but especially so to those often acting in detached parties,

where, away from the main body, a sore backed or lamed horse is a very serious consideration. In quarters, the stable routine, the keeping his saddlery and appointment in proper order, the care of his horse, are all duties which devolve equally on him as on the cavalry soldier.

In what single respect then can it be proved necessary to dispense with cavalry training, and to teach our mounted rifleman to consider himself an infantry and not a cavalry soldier?

To put it conversely, we should only have to enumerate the duties of mounted infantry, in quarters and in the field, to find them essentially those of the cavalry soldier, *i.e.*, those now performed by our cavalry, and those which it requires only certain alteration in the organization, &c., of our cavalry to admit of being performed by them, more effectually than by infantry, and without any loss of efficiency as horse soldiers.

History furnishes us with but comparatively * few instances of the successful use of mounted riflemen in any large numbers, it is as yet an undeveloped power, for the annals of which we must look to the future, not the past.

But in the records which we have, is there any mention of the infantry soldier put on a horse only as a means of locomotion, and used with success as a mounted rifleman? In the American war of 1861—65, which perhaps affords more examples of this kind of fighting than any other campaign, General Morgan's body of mounted rifles, deservedly conspicuous for the excellent service they did, and who have been sometimes quoted as the beau ideal of "mounted infantry," by advocates for that force, are spoken of by one serving with them, thus, "our men were all admirable riders, trained from childhood to manage the wildest horses with perfect ease"; such men could hardly, with fairness, be called mounted *infantry*.

Does it not then appear that the mounted rifleman, whatever we may call him, must in reality be not only a cavalry soldier in all respects, but a particularly well trained, well mounted and intelligent cavalry soldier, with the additional qualification of being able to use, when dismounted, a long range rifle with skill.

* I have heard it urged that one of the chief things to be avoided with the proposed new branch of mounted infantry is "cavalry swagger." Now, what does this latter amount to? Simply that the man takes a pride in himself and his branch of the service, thinks his corps the finest in that service and himself the finest man in it, and in 9 cases out of 10 will be more likely to act accordingly, and endeavour, by his conduct, to win others to his own opinion. Turning out smartly, with a forage cap well cocked, walking down the streets of the town where he is quartered, as if the whole place belonged to him, is surely not detrimental to a man's efficiency in the field; it hurts no one, and is often an excellent help to recruiting.

Would it not, therefore, be well, if instead of aiming at the production of a new "branch of the service," we were to consider if some modification of our present cavalry training, arming, equipment and clothing, especially the three latter, would not give us what we require.

In considering this, we must, I think, once and for all dismiss from our minds the contemplation of the mythical force of so called "mounted infantry," and realize the absolute impossibility of creating a permanent force of foot soldiers, mounted on horses, pony or mules only as a means of locomotion, who when brought to the field of battle could all, or even nearly all, dismount, have no further care for their steed, in fact, metaphorically speaking, "give them a kick in the ribs" until required for their next march, and fight entirely as infantry. We must not, of course, overlook the exceptional case of being able, on occasion, to utilize the "carriage" of the country in which a campaign is being carried on, for the purpose of conveying infantry rapidly, from point to point, such as the camel, or "ekka" in India, and country cars, i.e., of other countries; but while fully recognizing its importance, I maintain that such a case is entirely outside our present subject, and should be considered quite distinctly from that of establishing a permanent force of mounted infantry.

A different question. The main object that we should, I think, keep in view is, that we wish to produce a certain amount of dismounted, accurate, long range, rifle fire, with the least possible *matériel*; we must in fact look upon this "fire" in much the same way as we do at present on the fire of horse and field artillery, that is to say, that it requires a certain number of men and horses and a certain amount of "apparatus" to produce it, bring it into position, and protect it when in action, the dismounted riflemen corresponding with the unlimbered guns.

What we should try to produce instead of aiming at impossibilities. The comparative uselessness in modern warfare of a force of cavalry who cannot bring into play, when required, efficient dismounted fire; and the immense waste of material entailed in a costly force, as that of mounted riflemen necessarily must be, if they cannot act as cavalry (and mounted infantry, as usually advocated certainly could not act as cavalry), point that the force we require is a cavalry force which has it in its power to produce *as large a proportion as possible* of dismounted, accurate, long range, rifle fire and to thoroughly protect it, when in action, from attack on what must always be the weakest point of such a force, viz., its ~~and~~ horses and the men holding them: that while abandoning the phantom "mounted battalions," it is to our cavalry and their training, arming and equipment we should turn our attention.

To produce a complete and ready made scheme in detail for thoroughly adapting our cavalry system to the requirements of the duties of mounted riflemen, would be a task far beyond the aim of these notes, which is rather that of bringing to notice some of the salient points which may assist to that end.

The objections to arming the mounted soldier with the present infantry long rifle are great. Carry it almost how he will, it seems an encumbrance to him, and may often impede the proper use of his sword arm when mounted.

Slung on his back, carried in a bucket attached to the saddle, or by a combination of the two, the increased weight and additional length of barrel, as compared to the carbine, are serious considerations.* The present M.-H. carbine is a very excellent little weapon as far as it goes, but it is not as accurate, at its longer ranges, as might be wished. I am unprepared to say what the perfected cavalry carbine or rifle should be; but the subject is so important that no expense should be spared in experiments, and in inviting competition to produce the best possible weapon for the purpose, taking lightness, portability, long range, and rapid firing as essentials. Probably a "magazine" arm would be found to have great advantages for the work in hand. Even were it found that a more portable weapon, especially as regards length, than the M.-H. rifle, were not forthcoming, I do not think the foregoing difficulties of carrying it, by any means insurmountable and only allude to them in connection with what follows.

It is possible to dismount 75 per cent. of a body of cavalry, exclusive of any armed support or escort for the bad horses, that is to say, that one man holds three horses besides his own, and it is doubtful if this number can well be exceeded, by any kind of mounted troops, since it is not only requisite for them to *hold* these horses, but to be able, if required, to bring them up, at a trot or gallop, to meet the dismounted party when forced to mount hurriedly. There is, of course, the exceptional case of "linking" horses on an emergency, when perfect security for them can be reckoned on.

The intact support or escort, to be of any use, should not be less than one-third of the whole. Taking these proportions as a basis, a squadron of 48 file (96 men) acting on dismounted service could actually dismount 48 men, 16 would hold the horses of these, and 32 would

Comparatively small number that can use their fire arms.

form the escort.

If then we consider the disadvantages of a mounted soldier being obliged to carry a lengthy fire arm, when required to use, mounted, his "arme blanche," the above numbers suggest the possibility of arming in this way only the number of men required for dismounted fire, *i.e.*, one-half the entire force employed.†

* A removeable piece of barrel, fitting to the carbine with screw, clamped, to cause the rifle grooves to correspond, and carried in a separate bucket, has been suggested and tried; the objection of complication is urged. The carbine, without the extra piece, is, however, a complete weapon in itself and the idea seems worthy of a more extended trial.

† The necessity for this would much depend on the kind of long range weapon finally decided on for cavalry, as if sufficiently portable, *all* should be armed with it.

Thus the rear rank would be our mounted riflemen, and, when the maximum number of 75 per cent. were required, These then should be our riflemen. would all dismount, one-third of the front rank holding their horses, and the remaining two-thirds forming the escort. A few changes, in detail, from the present regimen in the arrangement of the files holding the horses of the dismounted men, and in the formation of the escort (as being taken from the same "unit") would be necessary.

Seeing that in all collisions of cavalry *v.* cavalry, it is the front rank who meet the brunt of the attack with their swords or lances, as the case may be, it is they therefore who should be left unencumbered, as much as possible, to use these weapons with advantage, and they might retain their present armament of sword or lance and short carbine in bucket.*

The rear rank, in addition to their long range fire arm, should carry a sabre, capable of being either attached to the sword attachable to either saddle or waist belt at pleasure. A sword bayonet is usually suggested by the advocates of mounted infantry, but I cannot imagine any occasion on which a sword bayonet would be useful to a mounted rifleman, certainly not on foot, as he never would, or, at all events, never *should*, be placed in a position to fight hand to hand, at close quarters, there, and most certainly not mounted where he could reach nothing with it.

The question of sword *v.* lance, although not altogether a part of our present subject, may be said to be in a way connected with it. The lance has been, with much truth, called the "queen of weapons" for a horse-soldier. It is almost undisputed that for "shock" of cavalry against cavalry, the lance is the more deadly of the two, its moral and actual effect, both being greater; the objection to it being, that when once the point is passed, even granting the skilful use of the "butt" at such a juncture, the lancer is more at the mercy of the swordsman than he would be if he also had had a sword in his hand.

This makes evident the advantage to be derived, in lancer regiments from arming the front ranks only with the lance, being supported (as would be the case with the sabres of the rear rank riflemen), by swordsmen behind. In pursuit, the advantages of the lance are obvious.

All cavalry should be taught it. In any case, the merits of the lance are so great as to warrant the teaching *all* cavalry its use, and keeping them perfected in it, by periodical practice; so that it would be only necessary to issue the weapons from store when required.

As regards musketry training; we cannot produce, without a great drain on others, entire regiments composed of marksmen, but it is possible I think to ensure one-half, *viz.*, the number required for the rear rank

* But this is again contingent on the best firearm for cavalry being ascertained to be a long one.

Musketry training. riflemen being all good shots. The whole regiment should of course be thoroughly trained in the use of the rifle (or perfected carbine) and a selection made for the rear rank marksmen, to whom, as marksmen, extra pay should attach ; all would endeavour to qualify as such, and the standard of excellence in the shooting of our dismounted riflemen would thus be as high as possible.

That the cavalry soldier can learn to shoot, and shoot well, in addition to all his other duties, has been ascertained. I have seen a cavalry regiment once encouraged by its commanding officer, and others, to take an interest in musketry, from almost the bottom of the annual list of figures of merit, in three years, go to the top, as the best shooting cavalry regiment in the service.

So much has been, and is being, done towards improving the fighting dress of the soldier, both horse and foot, that we may, I think, rest assured that this subject is receiving from those empowered to deal with it, the attention it deserves ; and that the main principle of making the fighting dress and the "swagger" dress distinct, and in the former of giving freedom of movement to the limbs, and of giving room for the wearing thick garments underneath the outer ones when necessary, the carrying of ammunition where it can be readily got at, and the adopting of a foot covering which gives comfort in walking as well as in riding, will not be lost sight of.

Clothing. It is evident that the actual drill for the dismounted men must, of necessity, be of the very simplest kind, when we give proper weight to a fact, so often apparently lost sight of by advocates of mounted infantry, *i.e.*, that of their having "~~bad~~ horses," from which they must never become really separated. Constant practice on a more extended scale of the "dismounted service," giving as much variety to the supposed conditions, and frequently having a skeleton, or imaginary, enemy, is more what is required than any elaborate dismounted drill. The mounted infantry "battalion" which having arrived on its fighting ground and rid itself of its horses, advances boldly against an enemy in the "attack formation," is an absurdity which could only exist in theory.

Drill. Training a certain proportion of infantry soldiers, in time of peace, to ride, and in the case of horses and mules, in order that, on the opening of a campaign, there will be a force ready at hand to be transported by such means, might be desirable, if time could be spared without interfering with their infantry training. But the possible theatres of war, for British troops, are so varied, and campaigns in them conducted under such different conditions, that it seems doubtful if infantry should not, with just as much reason, be trained to use camels, dromedaries, elephants, ekkas, cars, boats, &c., or any of the various country "carriage" of different parts of the globe. But however this may be, it cannot be too strongly urged that this is a perfectly distinct subject from that of raising a permanent force of mounted infantry.

The "different question."

The changes required to enable cavalry to perform the duties

led

of mounted riflemen are not sweeping, nor are they radical. They should not in the smallest degree impair the efficiency of the force as cavalry, or in any way interfere with their functions as such.*

The idea of "mounted infantry" is undoubtedly a taking one, and will probably gather many supporters, but in the humble opinion of the writer it is a "myth," founded on an exaggerated idea of the possible powers of such a force to act as "infantry" at all, and a want of appreciation of what cavalry should, and could, do, if properly trained, armed, equipped and clothed.

* The Russians have, after much consideration and many trials and experiments, decided against "mounted infantry." They have put all their carabineers in the rear ranks, retaining the lance and sword in front. Several of our native cavalry regiments in India, notably the Central India Horse, are equipped in this way with much success. 1884.

NARRATIVE OF THE BRITISH WARS WITH CHINA FROM 1840 TO 1860.

*Selections from a Military Report on North-East, Central and South
China, submitted to the Quarter-Master General in India.*

By Lieut.-Col. MARK BELL, V.C., R.E., A.Q.M.G.

(Continued from No. 59, page 72.)

EVENTS TO CANTON EXPEDITION OF 1846.

THE trade hindrances removed by the British treaty were (1) the confinement of trade to Canton, the most southern port of the Empire; (2) its restriction to monopolists, called Hong merchants; (3) the oppressive nature of the burthens put upon it; (4) the intolerable nature of the jurisdiction claimed over Europeans; (5) the degrading terms of inequality on which it was conducted.

Henceforth the British Government was to enact the laws for the control of its own subjects, who were to be under the authority of consuls appointed to each port.

The advantages gained by the British were made to apply to all Christendom.

With regard to the treaty stipulation that an entire amnesty should be granted to all who had aided the British during the war, it was never fulfilled, and there is every reason to fear that many of them suffered.

In Peking almost every Chinese of rank and influence was opposed to the fulfilment of the treaty and to its negotiators, the chief rancour being mainly directed against the Tatar, Keying. China's financial exhaustion alone maintained the treaty and saved the country from further disasters. The public fury demanded the sacrifice of many innocent victims.

In Canton adverse feeling ran strongest; here the prestige of the rulers had been destroyed. An association of patriots was formed, in which the malcontents of the neighbouring villages enrolled themselves. It was countenanced by the authorities and its members supplied with arms; in fact, these trained bands were considered to constitute part of the national defences of the country. Large contributions of money were given privately for the purpose of rebuilding the forts and casting guns.

This arming of the populace, never previously the policy of the government, sowed the seeds of rebellion and many difficulties.

The Cantonese patriots openly boasted of their power to exclude foreigners from Canton, and, alluding to the occurrences on the heights of Canton, openly declared that should they again offend, they should not be again saved from their vengeance by a *prefect begging peace for them*.

Keying was appointed Commissioner at Canton, and in general performed with skill a most difficult task, good faith being kept so long as the securities for it were ample and sufficient. On the payment of the 5th instalment of the indemnity in March 1845, Kulangsu was evacuated. So high an importance was attached to the possession in perpetuity of Chusan, that the British plenipotentiary, Sir J. Davis, was authorised, at his own discretion, to negotiate its cession for an equivalent. The Chinese, well aware of its importance as a base of operations against mid-China, would on no consideration part with it. It was evacuated in July 1846.

In 1846 the populace of Canton had reached the culminating point of misrule. Several cases of violence, insult, and unprovoked attack on foreigners took place, and it became necessary in 1847 to send a naval and military expedition to Canton. The resisting batteries were taken, and 827 pieces of cannon disabled, Canton being reached in 36 hours from Hong-Kong. An excellent account of this expedition is given in the Annual Register for 1847. Its object was fully obtained; and an immediate reparation made before the expedition quitted Canton.

On account of the weakness of the government and its loss of prestige, pirates began to multiply to an alarming extent; every trading junk carried an armament of cannon for its own protection, and when occasion offered itself, turned pirate.

Secret societies on land received stimulus and encouragement, and insurrections and riots became numerous, the people uniting to gain their ends.

To provide for the immediate necessities of the state, rank was sold and civil appointments given to the highest bidder—courses the worst that could be adopted in a country where both are looked upon as the rewards of educated talent alone, and which could not but embitter against the government the literary and official classes.

Punishments were made commutable for money, and the public works neglected to such an extent that serious inundations resulted, followed by much misery.

On the 25th of February 1850 the Emperor Taoukwang died, and was succeeded by his fourth son, T'ung-chi, when under the age of 20 years.

In July 1850 a rebellion broke out in Kwang-si, which assumed vast proportions and spread widely in the south under the *soi-disant* Emperor Tien-tih, who proclaimed the rule of "celestial virtue," and displayed banners inscribed with "Extermination to the Tatars, and restoration of the Ming dynasty." This rebellion, known as the Taiping rebellion, spread widely and threatened at one time to gain the ends inscribed upon its banners.

It was the policy of the Chinese at this time studiously to endeavour to force the British to reside at Hong-Kong, and on the plea of the inadvisability of arousing the mob to close Canton to them. This unsatisfactory state of affairs lasted till

1857, when during the viceroyalty of Yeh, a man of restless energy, great obstinacy of character, and an advocate of the exclusion of foreigners from the Empire, matters were brought to a climax by indignities offered by him to the British flag.

OPERATIONS, CANTON, 1856-57.

On the 8th October 1856 the lorch (a vessel, half-foreign, half-Chinese built) *Arrow*, was boarded, while at anchor, at Canton, by a party of Chinese who seized 12 of her crew, bound and carried them away, and hauled down the British flag.

All apology for the outrage being pointedly avoided, retaliatory measures were taken, and two of Her Majesty's ships-of-war were despatched to Canton, but without producing any satisfactory results. It was considered that the best way to display force without the sacrifice of life, would be to seize the river defences of the city of Canton, experience of Chinese character having proved that moderation is considered by the officials to be a sign of weakness only. Accordingly on the 23rd October this was effectually carried out by the Admiral, the following ships-of-war being engaged in the operation, *viz.*, the *Calcutta*, *Sampson*, *Barracouta*, and detachments of Royal Marines and boats' crews of the *Calcutta*, *Winchester*, *Bittern*, and *Sybil*. The guns of the forts were spiked, their carriages and ammunition destroyed, and the buildings in them burnt.

Notwithstanding these measures the Viceroy Yeh remained impassive. His yamun (official residence) was then shelled, and on the 29th October the city walls bombarded from the Dutch Folly fort, and in the afternoon they were assaulted and carried, with a loss of 8 marines killed and 11 wounded, but were not held. On the 3rd November the government offices in the Tatar city and Gough's fort were slowly bombarded; on the 5th the *Barracouta* and *Coromandel*, with other ships' boats, attacked and dispersed a fleet of war junks.

The British loss amounted, during these operations, to 1 seaman killed and 4 wounded.

On the 8th November unsuccessful attempts were made to destroy our ships with fire-rafts.

Yeh offered a reward for the heads of the British Commissioners and, remaining still inflexible and refusing all redress, the Bogue fort was attacked and destroyed on the 12th, the *Encounter*, *Calcutta*, *Nankin*, *Barracouta*, and *Hornet* being engaged.

The two Wantong islands, attacked from the Bremer channel side, were taken possession of after a resistance of about one hour. Upwards of 200 guns were captured. The British casualties amounted to 1 boy killed and 4 men wounded.

The Anunghoy forts, mounting 210 guns, fell on the 13th without a casualty on our side.

The High Commissioner Yeh still refusing all redress, it was determined to collect together at Hong-Kong a force sufficient to take and occupy the city of Canton, without declaring war against the Empire, treating the dispute as a local one. The state of affairs in India

for a time drew aside the force sent from England to effect this purpose, and it was not till late in 1857 that a sufficiency of troops arrived. In the meantime all intercourse with Canton ceased, the fleet holding the river approaches to it.

On the 25th May, Commodore Elliot in the Hong-Kong gun-boat, followed by the *Bustard*, *Staunch*, *Starling*, and the *Forbes*, towing the boats and boats' crews of the *Inflexible*, *Hornet* and *Tribune*, proceeded 5 miles up the Escape creek, and encountered there 41 mandarin junks, moored across the stream, each armed with one 24 or 32-pounder forward, and with from four to six 9-pounders in addition. The junks were dispersed. The gun-boats drew 7 feet 6 inches and the junks 8 feet only, so that the former grounded and the pursuit had to be carried on by the boats. Sixteen junks were taken and destroyed in the main creek, 13 escaping. On the 26th the creeks communicating with the Canton river being closed, the pursuit was continued as far as Tung-koon, where 12 large junks were destroyed.

On the 29th May, Admiral Seymour, on board the *Coromandel* tender, accompanied by the *Haughty*, *Opossum*, *Forester*, and *Plover* gun-boats, left Hong-Kong to disperse the fleet of war junks collected in the creek leading to Fatshan from the Macao fort passage. The gun-boats were armed, as a rule, with two long 36-pounders and one 68-pounder.

At this time there were stationed along the river, at "Second bar anchorage," the *Tribune*, *Fury*, *Hornet*, *Bittern*, *Sibylle*, and the gun-boats *Staunch*, *Hong-Kong*, and *Forbes*; and higher up, the *Inflexible*, *Niger*, *Cruiser*, *Elk*, *Acorn* (12-gun brig) and the *Bustard* gun-boat.

The Macao fort was held by 250 mariners.

Two miles from the mouth of the Fatshan creek is a long low island called Hyacinth island, with a steep hill on the left bank occupied by a fort mounting 19 guns; beyond the island, two smaller creeks go off to the right and left. Along these and across the main channel 72 junks were moored. A 6-gun battery had been erected on the shore opposite to the fort. The river was staked above the fort.

The plan of attack was that the *Coromandel* leading, with 300 marines in tow, should land them under the fort, the gun-boats following.

The time selected for the attack was early dawn on the 1st June, low tide, so that the gun-boats grounding might readily be got off, and, in order to prevent the escape of the junks, many of which would be, at that state of the tide, aground.

Following the *Coromandel* were the *Hong-Kong* gun-boat, the *Haughty* towing the boats of the *Fury*, *Inflexible*, and *Cruiser*, the *Bustard*, *Forester*, *Plover*, and *Opossum*.

The boats' crews and marines carried the hill fort, ascending its precipitous side, after a slight resistance.

The fleet of gun-boats soon dispersed, burnt, or sunk the junks, notwithstanding their heavy fire.

So soon as a junk was boarded, its crew jumped overboard. Seventy-two of them were either taken or destroyed.

Commodore Keppel, in the galley of the *Hong-Kong*, with the row-boats of the *Calcutta*, the *Bittern*, and the *Niger*, pushed through the line of junks towards Fatshan, encountering, at an island near that town, 20 junks moored to the shore and aground.

This small force suffered heavily and was driven back.

On the arrival of reinforcements and the junks beginning to float and retire, the action was resumed and soon turned into a chase, the junks with their numerous oars getting away very quickly. Few, however, if any, escaped.

In the two engagements of Tong-koon and Fatshan 14 men were killed and 70 wounded.

Lord Elgin arrived in Hong-Kong early in July, whereupon the leading merchants of Hong-Kong presented an address, in which they stated their opinion, "an opinion founded upon long, reluctant, and traditional experience," that with regard to the "Canton difficulty" any compromise of it, or any sort of settlement which should stop short of the complete humiliation of the Cantonese—which should fail to teach them a wholesome respect for the obligations of their own government in its relation with independent powers, and a more hospitable reception of the foreigners who resort to their shores for the peaceful purposes of trade—would only result in further suffering to themselves and further disastrous interruptions to the merchants—an address implying that Canton should be occupied and negotiations opened at Peking with Canton in possession. The recollections of General Gough's retirement without entering the city and without dispersing the "patriotic volunteers" had led to the present difficulties.

Lord Elgin immediately left Hong-Kong and proceeded to India, whither the 5th and 19th Regiment *en route* to the former place were diverted.

The Chinese officials at Hong-Kong were of opinion that, in order to coerce the Court of Peking, it would be necessary to cut off the supply of food from the capital—an opinion drawn from the precedent of the last war.

Nine of the eighteen provinces produce rice, and have or had water communication with Peking.

These provinces are Fu-kien, Chê-kiang, Kiangsu, Shantung, Hupeh, Hunan, Kiangsi, Nganhway, and Szechuen. They are supposed to pay a yearly tribute to Peking of 10,000 junk-loads of rice, each of 1,000 piculs of 133½ lbs.

In recent years the 10,000,000 piculs have been largely diminished. Inland water communication north of the Yang-tse being now closed, the rice is collected at the coast ports as soon as harvested. In February the junks start on their journey north; Chinese steamers now largely carry this tribute rice from Shanghai.

Again, it may be argued that we war with the Peking government, and not against the people, and that consequently to cause distress in North-East China by raising there the price of grain, causes the popular

feeling to become inimical to us, and that, therefore, the Chinese ports should not be blockaded. It is also pointed out that to commence a war of blockade is to teach the Chinese a lesson which they can return with interest against the invader, by cutting off supplies from all the treaty ports of the Empire.

On the 28th October, 500 marines arrived at Hong-Kong from England, and were disembarked at Wantong. A commissariat dépôt was formed on Tiger island. The 59th Regiment garrisoned Hong-Kong. A transport department of 750 Chinese coolies, "Hakks," or men drawn from a mountain district, and having little respect for mandarin authority, was organised to act as general transport and to transport the guns, sixteen being told off to carry each gun.

A corps of engineers and sappers and miners was fashioned out of troops of the line, to form which Colonel Lugard, of the Royal Engineers, worked incessantly, until he fell a victim to hard labour in a treacherous climate.

Early in December, reinforcements, numbering about 1,000 bayonets, arrived; in all there were then some 700 guns and 7,000 men between Canton and Hong-Kong, capable of supplying a land force for operations of some 4,000 men.

The French force co-operating consisted of 3 frigates, 2 corvettes, 4 gun-boats, and about 1,000 men, out of which 600 could be landed.

The ships of war on the China station at this time were as below :—

AT HONG-KONG.

British.

The <i>Algerine</i> , gun-boat (3).	The <i>Hercules</i> , hospital ship (10).
The <i>Bittern</i> , sloop (12).	The <i>Janus</i> , gun-boat (2).
The <i>Bustard</i> , gun-boat (2).	The <i>Kestrel</i> , gun-boat (2).
The <i>Clorn</i> , gun-boat (2).	The <i>Minden</i> , store ship (4).
The <i>Coromandel</i> , steamer (3).	The <i>Opossum</i> , gun-boat (2).
The <i>Dove</i> , gun-boat (2).	The <i>Starling</i> , gun-boat (2).
The <i>Drake</i> , gun-boat (3).	The <i>Surprise</i> , despatch steamer (4).
The <i>Emperor</i> , steam yacht (4).	The <i>Sybille</i> , ship (44).
The <i>Furious</i> , steamer (16).	The <i>Tribune</i> , steamer (31).
The <i>Haughty</i> , gun-boat (2).	The <i>Volcano</i> , steamer (3).

American—1 sloop (18), 1 steamer (50), 1 steamer (15).

French—1 steamer (12).

Dutch—1 steamer (18).

Spanish—1 steamer (6).

AT MACAO.

Portuguese—1 lorch (6), 1 brig (20).

American—1 sloop (16).

Russian—1 steamer (6).

AT THE BROTHERS.

French.

1 steamer (50), 4 gun-boats (6), 1 steamer (6), 1 frigate (50), 2 steamers (8).

IN THE CANTON RIVER.

British.

The *Acorn*, sloop (12).
 The *Actæon*, surveying ship (26).
 The *Banterer*, gun-boat (3).
 The *Calcutta*, ship (80).
 The *Cruiser*, steamer (17).
 The *Elk*, sloop (12).
 The *Esk*, steamer (21).
 The *Forester*, gun-boat (2).
 The *Highflyer*, steamer (21).
 The *Hesper*, steamer (2).
 The *Hornet*, steamer (17).
 The *Inflexible*, steamer (6).

The *Lee*, gun-boat (3).
 The *Severn*, gun-boat (3).
 The *Nankin*, ship (50).
 The *Niger*, steamer (14).
 The *Plover*, gun-boat (2).
 The *Racehorse*, sloop (14).
 The *Sampson*, steamer (6).
 The *Slaney*, gun-boat (3).
 The *Staunch*, gun-boat (2).
 The *Watchful*, gun-boat (2).
 The *Woodcock*, gun-boat (2).

AT AMOY.

British.—The *Comus*, ship (14).

AT FUCHOW.

British.—The *Comilla*, sloop (16).

AT NINGPO.

British.—The *Nimrod*, steamer (6).

AT SHANGHAI.

British.—The *Cormorant*, gun-boat (14); the *Pique*, ship (36).

French.—1 frigate (40), 1 steamer (12).

On the 12th December 1857, the Earl of Elgin again opened negotiations with Commissioner Yeh, pointing out that acts of incendiarism and assassination had been promoted by efforts of reward, treaty obligations disregarded, and redress of grievances denied, and calling upon him to concede the following demands, *viz.*, the complete execution at Canton of all treaty engagements, including the free admission of British subjects to the city; the granting compensation to British subjects and persons entitled to British protection for losses incurred in consequence of the late disturbances—failing which, he was warned that operations would be prosecuted, with renewed vigour, against Canton.

Yeh, not acceding to these moderate demands, a joint British and French force under Rear-Admiral Sir M. Seymour, Commander-in-Chief, moved on Canton.

The attacking force, exclusive of the vessels-of-war, consisted of—

Troops from the garrison of Hong-Kong, <i>i.e.</i> , 59th Regiment,				
Artillery, Engineers, and a portion of the Madras troops	...	...	...	800
Marines	...	...	...	2,500
Naval Brigade	...	...	...	1,500
French troops and sailors	...	...	...	900
				<hr/> 5,700

Coolies—

Chinese	...	...	...	671
Attached to Medical Staff	...	...	...	85
Commissariat	...	...	...	48
Malays	...	...	...	183
				<hr/> 987

The northern treaty ports were at this time protected only by the ships-of-war given *ante*; placards had already been posted at Amoy threatening the massacre of the English there.

On the 16th December the island of Honan was occupied by a battalion of Marines and 150 French sailors, the disembarcation taking place upon the back of the island, the force, marching across it to occupy quarters in the houses lining the river. The island is swampy and unhealthy, except in the cold season.

On the 23rd the forts on the north of the city were reconnoitred from Tsing-poo on the Sulphur creek. The party consisted of the commanders and their respective staffs, escorted by 170 marines and 25 French blue-jackets.

On the 24th the eastern side of the city was reconnoitred; the party landed in the Sha-ho creek about a mile to the east of the French Folly, and reached a point about 800 yards from the eastern gate of the city, and the same distance from Fort Lin.

Fresh supplies were plentiful, being procured both locally and from Hong-Kong.

On the 26th December the following General Order was issued, dated from head-quarters, Honan :—

"I. The troops under command of Major-General Van Straubenzee, C.B., will be formed into brigades as follows :—
 Organisation of the land force to attack Canton. "1st, or Colonel Holloway's Brigade—1st Battalion, Royal Marine Light Infantry; 2nd Battalion, ditto under command of Colonel Holloway.

"2nd, or Colonel Graham's Brigade—Royal Engineers and Volunteer company of Sappers; Royal Artillery and Royal Marine Artillery; Provisional Battalion, Royal Marine Light Infantry; 59th Regiment; 38th Madras Native Infantry, under Colonel Graham, 59th Regiment.

"The whole of the artillery will be placed under the orders of Colonel Dunlop, R.A., &c., &c., &c."

General order directing operations.

The General Order published by the Admiral is as follows :—

Dated before Canton, December 26.

"The Naval and Military Commanders-in-Chief of the Allied Forces before Canton have agreed to the following order of operations against the city. First bombardment to commence at day-break on Monday morning, the 28th December :—

"The *Actæon*, *Phlegethon* and gun-boats, on the signal hereafter indicated being made, will open fire on the south-west angles of the city walls, with a view to breach them and impede the communication of the Chinese troops along their parapets to the eastward.

"The *Mitraille*, *Fusée*, *Cruiser*, *Hornet*, gunboats *Niger* and *Avalanche*, and the Dutch Folly fort, with a similar object, will breach the city walls opposite the Viceroy's residence, the mortars in the Dutch Folly likewise shelling the city and Gough heights.

"The *Nimrod*, *Surprise*, *Dragonne*, *Marceau*, gunboats, between the Dutch Folly and the French Folly forts, will open fire on the south-east angles of the new and old city walls, and the walls forming the east side of the city.

These three several attacks will commence simultaneously, when a white ensign shall be hoisted at the fore of the *Actæon*, and a yellow flag as a corresponding signal at the same time hoisted at the fore of the *Phlegethon*.

"The *Hornet* and the *Avalanche* will repeat these signals at their fore so long as the flags remain flying on the above-mentioned ships.

"The bombardment is to be in very slow time, and continued day and night, not to exceed per each gun employed 60 rounds (except the *Nimrod*, *Surprise*, *Dragonne*, *Marceau*, which will fire 100 rounds) during the first 24 hours.

"Immediately the bombardment opens the landing of the allied troops will take place at the creek in Kuper (where the British and French flags will be planted) in the following order, commencing at daylight :—

1. Sappers and miners, 59th regiment, royal artillery, stores, ammunition, &c.
2. The French naval brigade, stores, &c.
3. The naval brigade under the orders of Commodore the Honourable C. Elliot.
4. The naval brigade from Canton.
5. Lieutenant-Colonel Lemon's battalion of royal marines.
6. Colonel Holloway's, &c., &c.

"The following will be the disposition of the united forces after landing :—

"British naval brigade on the right.

"Centre brigade, composed of Lieutenant-Colonel Lemon's battalion of royal marines, 59th regiment, royal artillery, sappers.

"French brigade on the left.

"Colonel Holloway's brigade in reserve with royal marine artillery.

"After getting into position, the allied forces will remain in line of contiguous columns of brigade until further orders for an advance, which will be made to a position for the night, preparatory to active service in the morning.

M. SEYMOUR, *Rear-Admiral*,
Commander-in-Chief of H.B.M.'s Naval Forces.

C. REGNAULT DE GENOUILLY, *Rear-Admiral*,
Commander-in-Chief of H.I.M.'s Naval Forces.

C. F. VAN STRAURENZEE, *Major-General*,
Commanding the Military Forces."

The British naval brigade consisted of three divisions—

1st division of a total of 584 officers and men.

2nd	"	"	474	"	"
3rd	"	"	446	"	"

Grand Total ... 1,015

The bombardment and landing was carried out as directed, the landing being effected in Kuper (or Sha-ho) creek, which falls into the river about 1 mile to the east of the south-east corner of the city. After a short battering from the 9-pounder field-pieces, Fort Lin was assaulted and carried. It mounted 3 guns, and from them and numerous gingalls a well-directed fire was, previously

Attack on Canton. to the assault, kept up. About an hour after its occupation it blew up accidentally. Beyond the fort a large body of Tatar troops was encountered and dispersed; the troops bivouacked about Fort Lin or East Fort.

About half a mile to the north of the east gate and outside the walls is a suburb, which, on the morning of the 29th, was occupied by the French and some companies of the 59th Regiment. The wall, 20 feet high, here rests on a bank of earth, and at the foot of this bank run a wide shallow ditch. It was here escalated on either side of a pro-

truding half-square bastion, the parapet wall having been first destroyed by 4 French field-pieces.

The orders agreed to were that the assault should be made at 9 A.M. This time was anticipated by 20 minutes, in consequence of which our forces suffered some loss, the bombardment not ceasing till the appointed hour.

Forming on the parapet the troops moved towards the five-storeyed Pagoda.

The naval brigade scaled the wall somewhat later than the above party, about 200 yards south of the north-east gate, where the wall is about 20 feet high, and is fronted by a ditch 40 yards wide, beyond which, cover was given by buildings. Both parties having joined, the Magazine heights were occupied.

At the time of the escalade, an army of Chinese issued from the north of the city and came out in the open to harass the flank and rear of the attacking force. The reserve brigade of marines, under Colonel Holloway, had been expressly stationed to the north-west of Lin's fort to meet this contingency. The ground here was well suited for skirmishing, and the Tatars inflicted some loss, but were rapidly put to flight.

Gough's Fort being commanded by Magazine hill, fell after its capture, by assault at 2 P.M. In one hour and a half from the time of the escalade the defences of the city had fallen, the Chinese troops dispersing and keeping up a desultory fire from the houses.

The allied losses in killed and wounded were—British 96, French 34, the wounds being under the average severity. The Chinese lost about 200 killed; number of their wounded unknown.

The troops bivouacked in the open or occupied buildings on Magazine hill. Whilst numbers were still shelterless, 70 hours of rain fell, from which the troops suffered greatly.

The coolie corps did excellent service, carrying ammunition close up to the rear of the columns.

The line of communications ran from Kuper or Sha-ho creek across the southern parade ground to the east gate, until the landing stage constructed at the south-east point of the city was completed.

Notwithstanding the occupation of the Magazine heights, Yeh proffered no offers of submission or prayers for protection. On the 5th January 1858, the troops entered the city, secured the treasure, and captured Yeh and the chief officials, together with the Tatar general.

To carry on the government of the city a board was appointed, consisting of its lieutenant-governor, aided by a council of three foreigners. A city police was established, consisting of 100 British soldiers armed with swords and revolvers, and 30 French. Associated with them was an equal number of Tatars. Seven police stations were established in various parts of the city and suburbs.

The arsenals were ransacked and all arms and ammunition secured. The three imperial armouries were found to be in a high state of efficiency.

The prisoners taken prior to the operations by kidnapping were never again heard of. In dealing with this nation of fair words and foul deeds, it is necessary to seize high officials and hold them as hostages for the lives of all such unfortunates as may fall into their power.

Treatment of prisoners.

On the 10th February the blockade of the river was raised. To protect trade a water police was established, consisting of 15 junks (snake-boats) and 3 gun-boats. Canton re-opened. Early in March an additional Indian regiment (the 65th) arrived in Canton.

Viceroy Yeh was sent to Calcutta as a political prisoner in February 1858. The four great powers of England, France, America, and Russia were now in accord, and determined separately to send a general statement of grievances and demands to Peking, proceeding to Shanghai to negotiate.

Negotiations.

To the communication made by the Plenipotentiaries of the four Powers, acting in concert, to Peking that a minister possessing full powers should be sent to Shanghai before the end of March to treat on the several points of disagreement and to place our relations with China on a safer and more satisfactory basis, an unsatisfactory and evasive answer was received, whereupon Lord Elgin announced his intention, of which the Imperial Court had been previously informed in the above-mentioned communication, of proceeding at once to the north in order to place himself in more direct communication with the high officers of the Imperial Government at the capital.

EXPEDITION TO THE PEI-HO, 1858.

On the 1st of April, no imperial commissioner having arrived at Shanghai, it was decided to move northwards. On the 10th of April, Lord Elgin accompanied by a small squadron composed of the *Pique*, the *Cormorant* and the *Slaney*, together with the *Amerika* (Russian), *Audacieuse* (French), *Minnesota* (American), left Shanghai and, arriving off the Pei-ho on the 15th, there awaited the arrival of the light-draft gun-boats from Hong-Kong. On the 24th of April a further communication was transmitted to Peking demanding that a properly accredited minister should be sent to Taku to negotiate before the expiry of six days, failing which the British plenipotentiary expressed his intention of adopting such further measures for enforcing the just claims of his Government on that of China as he might think expedient.

A sufficient squadron to enable our demands to be enforced was not assembled off the Pei-ho till the middle of May, a delay which caused the Chinese to gain confidence, gave time for the imperial junks bearing the grain tribute to ascend the river, and also enabled them greatly to strengthen their works guarding the entrance into the river, which consisted, in the first instance, of little more than a line of mud batteries, resembling "a range of huge Perigord pies, the flags rather aiding their resemblance to ornamental pastry." On the other hand, it was advantageous, inasmuch as the scattering of the flower of the

Chinese army by a handful of our own men and the destruction of the defences in which they confided, and to strengthen which the armaments of Peking and Tien-tsin had to be drawn upon, would be calculated to inflict upon them a blow sufficient to break down all further resistance, both moral and material.

The following men-of-war were at this time anchored in the Gulf and off the mouth of the Pei-ho river,* *viz.*—

ENGLISH.			Guns.	Men.
<i>Calcutta</i>	...	...	84	700
<i>Pique</i>	...	...	40	270
<i>Furious</i> , paddle steamer...	...	...	8	220
<i>Nimrod</i> , despatch Government vessel	...	...	6	120
<i>Cormorant</i>	...	"	6	98
<i>Surprise</i>	...	"	6	98
<i>Fury</i>	...	...	8	160
<i>Slaney</i> , gun-boat	...	...	5	48
<i>Severn</i>	...	...	5	48
<i>Bustard</i>	...	...	3	48
<i>Opossum</i>	...	...	3	48
<i>Staunch</i>	...	...	3	48
<i>Firm</i>	...	...	3	48
<i>Coromandel</i> , paddle steamer	...	...	5	44
<i>Hesper</i> , store-ship	...	...	0	54
				<hr/> 2,052 <hr/>

FRENCH.	
<i>Nemesis</i> , frigate.	<i>Mitraille</i> , gun-boat.
<i>Audacieuse</i> , frigate.	<i>Fusée</i> , gun-boat.
<i>Primauguet</i> , steam corvette.	<i>Avalanche</i> , gun-boat.
<i>Durance</i> , store-ship.	<i>Dragonne</i> .
<i>Meurthe</i> .	<i>Renny</i> , store steamer.
<i>Phlegethon</i> , steam corvette.	

AMERICAN.	
<i>Minnesota</i> , steam frigate.	<i>Antelope</i> , steamer.
<i>Mississippi</i> , steam frigate.	

RUSSIAN.

Amerika, paddle steamer.

It was decided by the powers to make "a movement up the river, of a mixed hostile and diplomatic character," *i.e.*, to capture the forts if they should not be delivered up peacefully and to advance pacifically up the river with a view to meeting a plenipotentiary, even to Peking if necessary.

On the Taku garrison refusing to evacuate their works, the *Cormorant*, *Mitraille* and *Fusée* attacked the two northern forts, whilst the *Nimrod*, *Avalanche* and *Dragonne* engaged the three forts on the southern bank together with their long connecting line of sandbag batteries. The *Cormorant*, running the gauntlet of the fire of the forts, burst the river barrier, composed of five 7-inch bamboo cables, buoyed across the

* Oliphant.

river, and engaging the northern forts from above and taking them in reverse silenced them in eighteen minutes. A like fate attended the southern forts.

The storming parties landed close in under the embrasures of the forts and, entering by them, completely surprised the Chinese, whose attention was concentrated on the gun-boats and who were apparently ignorant of our practice of taking batteries by assault.

The gun-boats, advancing up the river, aided by the assaulting parties on land, carried the river defences to Taku, where a barrier of junks, flanked by a battery of eighteen field-pieces, barred further progress. The chief pieces of cannon taken consisted of brass guns, throwing 68-pound shot, 6-pounder field-pieces, iron guns throwing 18-pound ball, and gingalls.

Our loss was slight, and that of the Chinese about 200 men.

On the 26th Tien-tsin was reached without further opposition and there the moral pressure of our minister's presence, backed by the prestige of recent victory and by an army of scarce 2,500 men still on their way from England, and the naval force then on the station, extorted from the Peking court a treaty of a more extended scope than that which was granted to Sir H. Pottinger only after two-thirds of the sea-board had been ravaged, the imperial troops repeatedly vanquished, and the principal cities of the empire stormed and captured.

A company of engineers and the 59th Regiment opportunely arriving at Taku caused the Chinese to see the necessity of immediately concluding the treaty. The commercial position occupied by Tien-tsin and its importance as the depôt of grain and salt required for the capital increased the moral pressure which it was possible to bring to bear.

The total force landed at Tien-tsin did not exceed 600 men. This force occupied a defensible peninsula formed by a deep bend of the river.

The treaty of peace was signed on the 26th June 1858, and was assented to by the Emperor.

Affairs on the south made it imperative that neither the naval nor military force should be detained in the north any longer than was absolutely necessary.

On the 6th of July the force quitted Tien-tsin without visiting Peking. At this time also did they who best knew the Chinese character criticize adversely the retirement of our troops without visiting Peking in the character of conquerors and foretell its eventual necessity.

During the autumn of 1858 Lord Elgin met at Shanghai the Chinese Commissioners, and matters connected with trade regulations and tariffs were settled and the Chinese Customs Department inaugurated. To obviate the many abuses connected with the traffic in opium, it was placed upon the footing of other imports and a duty of 80 taels per chest placed upon it.

The third article of the treaty accorded to Great Britain the right of a resident minister at Peking. The discussion on this point led to this treaty right being retained, but, acceding to the desire of the

Chinese Commissioner, Lord Elgin promised to submit it as his opinion, that "if Her Majesty's Ambassador be properly received at Peking when the ratifications are exchanged next year, and full effect be given to all other particulars of the treaty negotiated at Tien-tsin, it would certainly be expedient, that Her Majesty's representative in China choose a place of residence elsewhere than in Peking, and that he make his visits to the capital either periodical, or only as frequent as the exigencies of the public service may require."

In November, Lord Elgin, accompanied by a squadron, composed of the *Retribution*, the *Furious*, the *Cruiser*, the *Dove* Expedition up the surveying gun-boat, the *Lee*, gun-boat, proceeded up the Sank-tse-kiang as far as Hank'ou, Sang-tse-kiang. engaging the Tai-ping rebels at Nan-king and Nganking on their offering to resist the progress of the fleet.

AFFAIRS AT CANTON, 1858-59.

The mode adopted of attacking Canton was a surprise to the Chinese, who expected the precedent of Lord Gough in 1841 would have been adopted and Fort Gough attacked, in which fort the flower of the Chinese force was shut up in expectancy of it.

The weather of March 1858 is described as wet, muggy and close.

In the middle of May some troops sailed for the Pei-ho under Sir M. Seymour; a company of engineers on the 11th sailed from Canton; the 59th Regiment later on sailed from Hong-Kong and on the 16th June a detachment of marine artillery, all destined for the Pei-ho. They returned without disembarking, the Chinese acceding to our terms.

On the 3rd of June a Chinese encampment at Sam-po-huey was attacked and its garrison dispersed.

Head money having been offered for barbarian heads, many outrages took place, to repress which it was necessary to undertake retaliatory measures.

During the subsequent months of the summer desultory attacks were made by armed parties against various parts of the position, i.e., against the West gate, Magazine hill, North gate, the north-west and north-east angles of the wall; such attacks were usually made under the cover of darkness. The immunity from serious attacks was due to financial difficulties, the Chinese Government being unable to pay its soldiery.

In spite of the conclusion of peace the camps of braves still remained in the neighbourhood of Canton, being kept up by the patriotic party, who levied heavy fines on all the natives who served the British.

On the 11th August a force of 500 men under General Straubenzee, aided by a party from Hong-Kong, captured by Attack on Namtoun. escalade and burnt the town of Namtoun on the Canton river, with the loss of 10 killed and 85 wounded. The attack was rendered necessary in consequence of placards of an objectionable nature having emanated from it. Its capture had the effect of rendering the patriotic party less actively hostile.

By November the extreme heat had passed. The country was now quiet, notwithstanding that camps of braves still existed in the neighbourhood of Mong-kong and Shek-tsin. To the eastward the camp at Sam-po-huey visited in June was unoccupied. The country was dry, the second crop of rice having been harvested in September. During the winter the greater part of the land lies fallow, that round the villages only being cultivated; during this season only can the country be ridden over and the troops manœuvred across it.

The braves having taken up their position about Shek-tsin it became necessary early in 1859 to dislodge them, they being under no official control and their operations directed by the patriotic committee. Between Shek-tsin and Canton lies a plain of paddy, dotted over with villages, backed by groves of trees and thickets of bamboo, and slightly broken by a chain of low hills, which rendered Shek-tsin invisible from the plain. Shek-tsin is situated on a low ridge, about 100 feet high, at the foot of which runs a river, 60 yards wide and 5 or 6 feet deep; its importance arises from the fine stone bridge, which here spans the river, and over which the roads north of Canton lead, that leading to Fayuen being one. The neighbourhood of Shek-tsin is much intersected by water courses. The bridge was strongly held and flanked by batteries; the river was also staked down stream, and further protected by the direct fire of cannon.

On the 8th of January, the gun-boats moved up the river to the attack (*see map*), and the land force advancing against the village in two columns by narrow roads. The enemy evacuated the village after firing a few shots. In the village was found correspondence showing that the Emperor had no intention of carrying out the treaty of Tien-tsin, and that secret orders had been issued to prevent our again entering the Pei-ho river or trading on the Yang-tse. It became evident, too, that the Viceroy of Canton and imperial commissioner, acting under secret instructions, was the upholder of the patriotic bands. The village was destroyed, a retaliatory measure which had a good effect, no further annoyance being attempted by the patriots.

Towards the end of January reconnaissances were pushed to Fatshan, Tailiek, Fayuen, Shaon-hing, Shuntuk, &c.

Early in April rice cultivation begins, that sown in April being cut in July; the second crop, then sown, is harvested in September or October; from April to October the paddy lands are impassable.

The British garrison holding Canton towards the close of 1859 consisted, speaking generally, of a division, one Canton : garrison. brigade of which was composed of British and one of Bengal troops. The British troops were the 2nd Battalion, Royals; 1st Battalion, 3rd Buffs; 57th Regiment; a battalion of Royal Marines; the 8th and 10th Companies, Royal Engineers; 6th Battery, 12th Brigade Royal Artillery; Rotton's Battery, Royal Artillery; a detachment of Military Train and departments. The Bengal Brigade consisted of the 47th, and 65th, and 70th Regiments, Bengal Native Infantry.

The force continued to be of this strength till the beginning of April 1860, when it was reduced to the strength of a brigade, the Bengal brigade returning to India on relief by the 3rd and 5th Regiments, Bombay Native Infantry; and the Royals, the Buffs, the 67th Regiment, the Marines, the 10th Company, Royal Engineers, Rotton's Battery and details, proceeding to the north to join the field force being organized to operate against Peking.

To do duty at Hong-Kong, the 21st Regiment Madras Native Infantry arrived there on the 2nd April.

The following extracts from the Journal of the Quartermaster General's Department relating to the weather and health of the troops, &c., at Canton, in 1859-60, are of interest:—

* * * * *

"18th January 1860.—Very cold, calm day, bright and clear; thermometer at 8 A.M. 42°. The 3rd Buffs and 67th Regiment marched out into the country to the eastward for exercise at 9 A.M. and returned at noon. The men carried their packs.

"The weather during the preceding fortnight has been very variable. On New Year's Day a change took place, and an overcast sky and close atmosphere succeeded to the bright and bracing climate that had lasted for nearly two months; from the 6th to the 11th instant heavy rain set in, accompanied by sharp northerly winds. The sun then again made his appearance, and the weather is now again beautiful, *but rather too cold*.

"The sick return, compared with that of the 28th ultimo, shows a small increase of sickness among the European portion of the force, amounting to 33 cases, principally of the Marine battalion, and a decrease of 20 on the part of the Indian sick. The general state of health may be considered satisfactory; only two deaths have occurred at Canton during the fortnight,—one gun lascar and one sepoy of the 70th Bengal Native Infantry.

"The city continues perfectly tranquil, as also the surrounding country.

"28th January 1860.—The weather, during the preceding fortnight, has been exceedingly variable, and no doubt trying, from the sudden changes of temperature; in the course of a few hours the thermometer has frequently indicated a difference of 30 degrees. There has been a considerable amount of rain, and several days have been *unusually warm* for the season of the year. The weather for the last two or three days has been overcast—a very great contrast to the clear, bright and beautiful climate that was experienced throughout the whole of the months of November and December.

General remarks—
Weather very variable.

A considerable quantity of rain.

dry, but cold and

Very great and sudden changes of temperature.

"28th January 1860.—The return of sick compared with that of the 14th instant, shows an increase of 32 sick among the European portion of the force, and a decrease of 52 in the Indian troops. The 3rd Buffs, the

Health of the troops.

strongest corps in this garrison, have only 48 sick, whereas the Royal Marines and 67th Regiment have 107 and 92 men respectively in hospital. The Royal Artillery and Royal Engineers have also rather heavy sick lists in proportion to their numbers; the former 51, the latter 48. The sudden changes of temperature have, no doubt, tended to increase the cases of diarrhoea and ague, but a great many men are suffering from their own indiscretion, venereal disease forming a very considerable item in the list of maladies, and the number of prostitutes has greatly augmented of late.

"There has been only one death at Canton during the preceding fortnight,—that of a sepoy of the 65th Bengal Native Infantry.

"Everything continues perfectly quiet in the city, and the neighbouring country. Regiments march out frequently for exercise in various directions, and patrols of mounted police occasionally visit villages and districts within a circuit of from 15 to 20 miles. The people are invariably civil, and there are no indications of any change in the friendly dispositions evinced both towards the troops and the constabulary. Parties of officers also make excursions, and are everywhere well received.

"13th *February* 1860.—Fine, bright day, blowing fresh from the north-east and cold bracing weather. Thermometer this morning 44°.

"The weather, during the latter part of the preceding fortnight, has been exceedingly variable; close warm days have been followed by cold and damp, and the wind, instead of blowing steadily from the north, has been southerly for two or three days at a time, and has then suddenly shifted back to the old quarter, producing a corresponding change of temperature. The early part of the month was very fine, but unusually warm.

"The sick return, compared with that of the 28th ultimo, shows a decrease of eight European and three Indian sick. This difference is so trifling as to be scarcely worth noting, except merely that it indicates that the health of the troops has not suffered from the frequent and rapid changes of temperature, which might be supposed to have a trying effect on men exposed to night duty.

Health of the troops
satisfactory.

Return of Sick in the China Command. Canton, 13th February 1860.

CORPS.	EUROPEAN SICK AT CANTON.		EUROPEAN SICK AT HONG-KONG.		INDIAN SICK AT CANTON.		INDIAN SICK AT HONG-KONG.	
	Officers.	Men.	Officers.	Men.	Officers.	Men.	Officers.	Men.
Royal Artillery ...	.....	19	.....	33	.....	...	.....	...
Royal Engineers ...	.....	19	.....	1	30	.....	...	.....
First Royals (Second Battalion) ...	1	3	2	70	.....	...	.....	...
3rd Regiment (The Buffs) ...	.....	55	.....	8	.....	...	.....	...
Royal Marines (Light Infantry) ...	2	99	.....	...	.....	...	.....	...
67th Regiment ...	1	76	1	13	.....	...	.....	...
Medical Staff Corps ...	.....	...	.....	9	.....	...	.....	...
Commissariat Staff Corps ...	.....	...	.....	...	.....	...	.....	...
Royal Gun Lascars ...	.....	...	.....	...	.....	2	.....	6
47th Regiment, Bengal N. I. ...	.....	...	.....	...	.....	...	1	11
65th Regiment, Bengal N. I. ...	.....	...	.....	...	1	34	.....	6
70th Regiment, Bengal N. I. ...	.....	...	.....	...	.....	22	.....	...
TOTAL ...	4	271	4	163	1	68	1	21

	Officers.		Men.	
European sick ...	...	...	8	434
Indian sick ...	...	...	2	79
TOTAL ...	...	...	10	513

"*Canton, 25th February 1860.*—A change of weather this afternoon; a strong breeze set in from the south-east; the sky became overcast and lowering, and the barometer fell considerably.

"*26th February.*—Fresh breeze from the south-east; cloudy and threatening wet, but the rain still holds off.

"The weather, during the preceding fortnight, has been exceedingly fine, with the exception of two or three days, when rain fell, but in no great quantity. The temperature has been pleasant and mild, and the mornings and nights delightful. The sun, for a few hours in the day, is already becoming too powerful to render continued exposure to it agreeable or even advisable.

"The sick return shows an increase of 11 European and 4 Indian sick since the date of that last rendered; but as a considerable accession of European troops, amounting to nearly 350 men, has taken place in the interim, the proportion of sick in this part of the force, compared with the present strength, is in reality less. There are still a great many cases of venereal disease. Only two deaths have occurred at Canton during the fortnight, both among the Native troops,—one sepoy of the 65th and one of the 70th Bengal Native infantry.

"Everything continues perfectly quiet in Canton and the vicinity. State of Canton and vicinity. A very considerable force is said to be assembled at Samshung, a small walled town on the West river, which was visited last year by the expedition, when returning from Shaon-hing. For what purpose these troops are collected does not appear known, but the rumour is that the mode in which they are to be employed will depend upon the aspect of affairs after the commencement of hostilities in the north.

Return of Sick in the China Command. Canton, 26th February 1860.

CORPS.	EUROPEAN SICK AT CANTON.		EUROPEAN SICK AT HONG-KONG.		INDIAN SICK AT CANTON.		INDIAN SICK AT HONG-KONG.	
	Officers.	Men.	Officers.	Men.	Officers.	Men.	Officers.	Men.
Royal Artillery ...	...	8	2	41	...	...	...	...
Royal Engineers ...	...	8	...	36	...	...	...	...
First Royals (Second Battalion) ...	...	8	1	69	...	...	...	...
3rd Regiment ...	...	48	...	12	...	...	...	...
Royal Marine Light Infantry ...	2	106	...	...	...	...	...	...
67th Regiment ...	1	71	1	28	...	...	...	...
99th " ...	...	...	...	13	...	...	...	...
Medical Staff Corps ...	...	...	...	8	...	...	...	...
Commissariat Staff Corps ...	...	...	...	1	...	...	...	...
Royal Gun Lascars ...	...	...	...	...	...	...	...	4
47th Regiment, Bengal N. I. ...	...	...	...	...	...	...	1	12
66th Regiment, Bengal N. I. ...	...	...	...	...	1	30	...	8
70th Regiment, Bengal N. I. ...	...	...	...	...	...	29	...	...
TOTAL ...	3	238	4	208	1	59	1	24

	Officers. Men.	
European sick ...	...	7 446
Indian sick ...	...	2 88
TOTAL ...	9	529

"Canton, March 13th.—The weather during the early part of this month was foggy and wet, raw and disagreeable. This was succeeded by a few bright, warm days, with the wind from the southward; the last two or three days have been overcast, but dry and comparatively cold, with a northerly wind. The annexed return shows a decrease of 53 European and 12 Indian sick; but since the last return rendered, 500 of the battalion of the marines have been taken off the strength of the garrison at Canton, and 44 of the same corps have been struck off invalided; taking, therefore, this reduction into account, there is little variation in the number of European sick, compared with the strength. As regards

the 1st Battalion, 3rd Buffs, there is a slight increase. With respect to the other corps there is scarcely any alteration. There have been three deaths during the past fortnight at Canton—a sergeant of Royal Marines, a private of the 67th Regiment, and a sepoy of the 65th Bengal Native Infantry. There has been a prevalence of catarrh and ophthalmia among the Buffs and 67th.

Return of Sick in the China Command. Canton, 12th March 1860.

CORPS.	EUROPEAN SICK AT CANTON.		EUROPEAN SICK AT HONG-KONG.		INDIAN SICK AT CANTON.		INDIAN SICK AT HONG-KONG.	
	Officers.	Men.	Officers.	Men.	Officers.	Men.	Officers.	Men.
Royal Artillery ...	...	9	2	41	...	...	...	...
Royal Engineers ...	...	6	...	36	...	...	...	...
1st Royals ...	...	4	1	69	...	...	...	...
3rd Regiment ...	1	56	...	12	...	...	...	...
Royal Marine Light Infantry ...	1	27	...	...	...	...	...	...
67th Regiment ...	...	79	...	28	...	...	...	...
99th " ...	...	...	...	13	...	...	...	...
Medical Staff Corps ...	...	...	...	8	...	...	...	...
Commissariat Staff Corps ...	...	...	...	1	...	...	...	...
Royal Gun Lascars ...	...	...	...	...	...	1	...	4
47th Regiment, Bengal N. I. ...	...	...	...	...	...	...	1	12
65th Regiment, Bengal N. I. ...	...	...	...	...	1	25	...	8
70th Regiment, Bengal N. I. ...	...	...	...	...	...	21	...	...
TOTAL ...	2	181	3	208	1	47	1	24

	Officers. Men.	
European sick ...	...	5 389
Indian sick ...	...	2 71
TOTAL ...	7	460

"28th March 1860.—The weather during the preceding fortnight has been variable, and the changes of temperature have been so great and sudden as to be exceedingly trying. Very warm and oppressive days have been followed by cold, caused by the change of wind from south to north-east. The fall of rain has been inconsiderable, although an overcast and lowering sky has frequently threatened wet.

"There has been, during the preceding fortnight, an improvement in the health of the European portion of the Force, and rather an increase of sickness among the Indian troops, who cannot stand, probably, the sudden changes of temperatures so well as the Europeans. No deaths have occurred at Canton during the fortnight. All continues quiet in Canton and the immediate vicinity.

Return of Sick in the China Command. Canton, 28th March 1860.

CORPS.	EUROPEAN SICK AT CANTON.		EUROPEAN SICK AT HONG-KONG.		INDIAN SICK AT CANTON.		INDIAN SICK AT HONG-KONG.	
	Officers.	Men.	Officers.	Men.	Officers.	Men.	Officers.	Men.
Royal Artillery	5	1	38	...	...	...	...
Royal Engineers	10	...	32	...	...	...	...
1st Royals ...	1	2	...	69	...	...	...	...
3rd Regiment	64	...	11	...	...	...	...
44th "	1	17	...	...	...	...
Royal Marines
67th Regiment	71	...	29	...	...	...	...
99th "	5	...	...	...	...
Medical Staff Corps	9	...	...	...	...
Commissariat Staff Corps	8	...	...	...	...
Royal Gun Lascars	1	...	7
47th Regiment, Bengal N.I.	29
65th " "	28	...	24
70th " "	28	...	...
TOTAL ...	1	152	2	213	...	57	...	60

	Officers. Men.	
European sick	365
Indian sick	117
TOTAL	<u>3</u> <u>482</u>

"31st March.—The strength of the 10th Bengal Native Infantry embarked was 7 European officers and 681 Native officers, non-commissioned officers, and privates, including 70 followers, nearly 300 men having died and been invalided since the arrival of the regiment at Canton, two years ago.

"14th April 1860.—The weather for the preceding fortnight has been, with a few exceptions, unusually cold for the season of the year. A considerable quantity of rain has fallen during that period at intervals, but there have been scarcely two consecutive wet days.

"It will be seen by the annexed return that the health of the troops, both European and Indian, is most satisfactory, the amount of sick being scarcely three per cent., *i.e.*, below the average proportion of disease at stations considered most healthy. Were it not for the prevalence of venereal at Canton the sickness there would be very trifling.

*Return of Sick in the China Command. Hong-Kong, 12th
April, 1860.*

CORPS.	EUROPEAN SICK AT HONG-KONG.		EUROPEAN SICK AT CANTON.		INDIAN SICK AT HONG-KONG.		INDIAN SICK AT CANTON.	
	Officers.	Men.	Officers.	Men.	Officers.	Men.	Officers.	Men.
Royal Artillery	12	...	4	...	...	...	...
Royal Engineers	15	...	10	...	...	...	...
Military Train	16	...	...	...	...	...	...
1st Royals	39	...	...	...	...	...	...
8rd Regiment	11	3	53	...	...	...	...
31st "	17	...	...	...	...	...	...
44th " ...	1	9	...	...	...	...	...	...
Medical Staff Corps	4	...	...	...	...	...	...
Commissariat Staff Corps
Royal Gun Lascars	6	...	2
31st Bombay Native Infantry	5
5th "	3
21st Madras "	12	...	...
47th Bengal "	14	...	...
66th " "
TOTAL ...	1	123	3	67	...	32	...	10

	Officers.		Men.	
European sick	4	240
Indian sick	19
TOTAL	4	232

"*Hong-Kong, Friday, 4th May.*—A board has examined into the state of a quantity of wheat brought from India for the use of the troops, and finding that it is bad, have condemned it. The General has ordered it all to be landed and replaced by good wheat : this will, it is found, cause delay. The wheat amounts to 800,000lbs., and came from Calcutta. The Indian Government has been written to on the subject.

"*Hong-Kong, 5th May.*—Last night there was a heavy fall of rain ; thermometer this morning at 6 o'clock 72°. The Health of troops. troops continue healthy ; 5 per cent. sick (Europeans and Indians). The Principal Medical Officer finds that many men have been sent from Bombay suffering from secondary syphilis, liver and other affections who ought never to have been sent here."

EXPEDITION TO THE PEI-HO, 1859.

The expedition to the north, undertaken for the purpose of ratifying the treaty of June 1858, sailed from Hong-Kong on the 26th May 1859, visiting Amoy, Fu-chow, Ning-po and Shanghai *en route*, the Chinese Commissioners endeavouring by every means in their power to protract

negotiations. The existence of a secret edict by the Emperor led to the belief that it would be necessary to again force the entrance of the Pei-ho. Admiral Hope, therefore, took all the necessary measures for re-inforcing the naval squadron by one battalion of marines and company of engineers from Canton. On the 12th June the expedition sailed from the Yang-tse-kiang, rendezvousing at Sha-lui-tien island on the 16th June. On the 17th a reconnaissance showed the passage of the river to be barred by a line of stakes, a cable floated across it and a boom. On the 21st the French and American squadrons arrived at the anchorage.

To the communication made requesting permission for Mr. Bruce to proceed to Peking, the answer received that the road *via* Pehtang should be taken, being rejected, on the 25th June Admiral Hope proceeded to carry out his instructions to open for him a passage by the Pei-ho.

The squadron to force the river passage and attack the forts, should they open fire, consisted of the *Plover*, *Opossum*, *Lee*, *Haughty*, *Banterer*, *Kestrel*, *Cormorant*, *Janus*, *Nimrod*, *Starling* and *Forester*, gun-boats of light draft.

The first position taken up was a line écheloned across the river below the barrier of iron stakes and at a mean range of 800 yards from the forts (*see plan*). The marines were left in junks captured from the enemy and which were used as barracks and anchored within the bar, just beyond the range of the forts, the deep draft vessels of the squadron lying outside.

The junk fleet was told off into divisions; each junk held about one hundred men each; the Chinese crews remained on board.

The engineers were distributed among the different gun-boats, to act as marksmen to fire on the embrasures, and were so equipped with tools and implements as to render each landing party complete as an assaulting force.

On the night of the 24th an unsuccessful attempt was made to blow a passage through the principal boom. The object of the gun-boats was to force the river barriers and to take up a position above the forts whence they could be enfiladed and partly taken in reverse.

The squadron got into position during the flood-tide and lay anchored waiting for the ebb, when each vessel, ascending and anchoring by the bow, would have its heavy guns always directed to the front.

At 2 P.M. the *Opossum* cleared a way through the stakes, drawing them, one by one, by means of a hawser, and, followed by the *Plover*, ineffectually attempted to make a way through the boom by butting against it at full speed. Whilst so engaged, a heavy fire was opened from the forts, hitherto masked, whereupon both vessels anchored, and the engagement became general.

At 5 P.M. the enemy's fire had slackened; the *Kestrel* and *Lee* were sinking, several vessels were aground, and all very much injured. *See plan*.

Meanwhile, the boats of the landing party had assembled below the stakes, and now pushed towards the shore opposite the southern portion of the south fort. The men jumped too eagerly overboard; many going

out over the stern, instead of the bow, and, getting into deep water, wetted their ammunition and rendered their rifles unserviceable. A portion pressed on as skirmishers, whilst others struggled to bring up the ladders and portable bridges; on these men the enemy's fire was specially directed, and they suffered great loss. The extent of mud to be crossed was between 500 and 600 yards. It was over the ankles deep and difficult to traverse; holes had been dug here and there, into which many men fell and got their rifles stuffed up with mud. At about 400 yards from the edge of the mud a row of piles, driven about 4 feet apart and from 2 to 3 feet high, meant no doubt to check the approach of boats, was encountered.

Here the men delayed to rest and in consequence suffered loss. About 100 yards in advance of the stakes a bed of green rushes, 40 yards wide, was crossed; beyond this a tidal ditch, 15 feet wide and 5 feet deep, nearly dry, but very difficult to cross on account of the great tenacity of the mud, was encountered. Here, many rifles became plugged with mud; a few yards in front of this was a wet ditch; about 60 officers and men swam or waded across this, and, sitting on its inner edge, gained cover behind the bank formed by the earth excavated from it, whilst they awaited the arrival of the bridges and ladders to enable the mass of the men to be brought up; the bridges were shot away, and but three ladders were brought up, which were soon broken. Unable to proceed for want of dry ammunition and serviceable rifles, the party lay there about 20 yards from the work, huddled up against the bank, whilst the enemy annoyed them by their fire. After dark, swimming back to the front ditch, they there obtained shelter, and about 10 p.m., having reached the water's edge, they waded out to the boats sent to convey them to the fleet. Our loss was considerable in killed and wounded; the *Kestrel* and *Lee* had sunk in deep water, and the *Plover* and *Cormorant* had grounded. The means at the disposal of Admiral Hope being considered unequal to the task of forcing a passage to Peking, or even of the forts and barriers closing the Pei-ho at Taku, the squadron sailed southward on the 11th July.

The failure of this attack showed that the Chinese had profited by the experience gained in 1858, and were prepared to meet an attempt to carry the forts by assault, and for which they were formerly unprepared. Had, however, the boom been effectually removed during the night of the 24th, or had the assault been attempted at high, instead of low water, the result might have been reversed.

The American ambassador and suite were permitted to proceed to Peking *via* Pehtang, being conveyed thence in covered country carts to Pay-tsang, above Tien-tsin, by boat to Tung-chow, and finally in covered carts to Peking, modes of conveyance indicating, in a country when every detail of life is a matter of precise regulation, the low esteem in which the mission was held; for our minister to have proceeded thus would have been to acknowledge the superiority of the Emperor to China to the Queen of Great Britain.

To atone for the outrage of thus firing upon the British flag Her Britannic Majesty's Government required of that of China an ample apology and the restoration of the guns, material and ships abandoned on that

occasion ; that the ratifications of the treaty of Peking be exchanged at once at Peking, and full effect given to that treaty ; failing the acceptance of which terms the Emperor was informed that means would be taken to compel him to observe his engagements.

To these demands the Chinese authorities in April 1860 refused compliance.

CAMPAIGN OF 1860.*

The British and French Governments having entered into an alliance for the purpose of enforcing, if necessary by arms, the stipulations of their respective treaties made at Tien-tsin on the 26th June 1868, with the Imperial Government of China, it was agreed that a British army of about 10,000 men and a French force of 7,000 should be despatched to China. The latter went direct from France ; the British from England, the Cape of Good Hope (1st battalion, 2nd Queen's, and India) ; the bulk from the latter country. A considerable portion of the Canton garrison—*viz.*, 1 battery Royal Artillery, 1 company Royal Engineers, 4 companies Royal Marines, 67th Regiment, 99th Regiment, and a detachment of the coolie corps—formed portion of the force, in the first instance occupying Chusan, and quitted Hong-Kong on the 1st April for this purpose. The French collected their force at Shanghai ; the British, theirs at Hong-Kong.

The force began to rendezvous at Hong-Kong in March, being disembarked on the Kowloon promontory, a lease of which was obtained from the Viceroy of Canton, of 500 taels per annum,—a tract of country more open to the south-west monsoon than Victoria on the opposite side of the harbour, and, being a large sandy plain, more suitable than it as an encampment for troops.

In July the sick dépôt was removed from Stanley, the sanatorium, to Kowloon, where Manila huts had been erected, its climate being considered quite equal to that of the former place.

The Commander-in-Chief, Sir Hope Grant, and Staff, the latter nominated by the Commander-in-Chief in India, arrived at Hong-Kong on the 13th March. The weather here is cool and pleasant till April and in the winter months cold and bracing.

Nothing was known of the resources of North-East China, consequently every requisite for an army in the field had to accompany the force. Hay and forage for the horses were the great difficulties, China producing, it was thought, nothing of this nature. The chief supply of hay came from Bombay, where there was not power sufficient to compress it as it is in England.

Transport was another great difficulty. Very good ponies were procurable in Japan, Manilla and Shantung, and others parts of China, but in insufficient numbers. The Indian mules and bullocks proved to be the most efficient. To

* Chiefly compiled from the account of the campaign by Lieutenant-Colonel Wolsley, with notes from the works of Swinhoe and McGhee, supplemented by extracts from the Journal of the Quartermaster-General's Department and General Orders.

supplement and organise the animals bought through native dealers from 20 to 40 dollars apiece, a battalion of the military train was from England.

Lieutenant-Colonel Wolseley writes that the horses for the military train in China had been brought at a great expense from Bombay, all the men provided with regular cavalry trappings and arms, cleaning and burnishing of which was quite enough for them to "As to dismounting for the purpose of assisting a Manilla drive coolie, the idea did not seem to occur to them as either desirable or necessary. After the day's work was over, the animals were tied by their drivers, upon whose humanity it then very much depended whether they were fed and watered." They were altogether instructed in matters relating to the packing of baggage and loading of carts, repair of break-downs, &c., &c.

Perhaps little else was to be expected of them, inasmuch as order did not evolve out of chaos by intuition, and these men, without previous training as superintendents of transport, and without knowledge of the language or peculiarities of the men placed under their orders, were given a task to which they were unequal. The result of the arrangement was that the animals in their charge were landed at Peking in a most inefficient state, and at the close of the campaign the numbers were insignificant so numerous had been the casualties among them.

The transport formed a branch of the Commissariat Department.

A coolie corps was, under the direction of Major Temple, raised at Canton and Hong-Kong, and these, notwithstanding that they were recruited from the scum of the population, did willing and excellent service. Each man received 9 dollars a month, besides two sets of clothes and rations.

The corps was chiefly officered by the Royal Marines. They numbered 5,000 men.

A number of Manilla men and bullock-drivers from Madras and Bombay were also enlisted for mule-driving.

The heterogeneous composition of the army, composed of Europeans and natives of India of all races and castes,—Pandies, Madras Bombay sepoys, Punjabis, and Pathans,—added immensely to the difficulties of the commissariat.

On the 8th March a despatch was forwarded by Mr. Bruce

Negotiations. British Minister in China, to the Imperial

Government of Peking, stating the very moderate terms upon which we were prepared to condone the insult offered our flag in 1859 at the Taku forts, and to re-open our friendly intercourse with the Celestial authorities. They were—

1.—An ample apology for the act of the troops firing on the Britannic Majesty's ships from the forts at Taku in 1859.

2. That the ratification of the treaty of Tien-tsin be exchanged at Peking, Her Britannic Majesty's Minister proceeding for that purpose by the Pei-ho river.

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3. That full effect be given to the treaty, and the indemnity of 4,000,000 taels promptly paid, as well as a contribution towards the expenses of the present expedition.

On receiving an unsatisfactory answer to these demands, it was determined to at once occupy Chusan and blockade all the forts north of the Yang-tse-kiang. On further consideration, the latter measure, directed by the

Occupation of Chusan.

Home Government, was not given effect to, the objects hoped to be gained by it appearing illusory, and being one likely to lead the Chinese to make reprisals upon our unprotected commercial ports, any one of which, with the exception of Canton and Shanghai, was at their mercy. Had the Chinese laid waste the country, burnt the standing crops, driven away the cattle and burnt the boats on the Pei-ho, the difficulties of our advance would have been immense.

Chusan as a coaling station and supply depôt was inferior to Shanghai, from whence came our chief supply of cattle.

To occupy Tinghai, a force, consisting of the 97th and 99th Regiments, 4 companies of Royal Marines, Major Rotton's battery of Royal Artillery, a company of Royal Engineers (10th), and 300 of the Chinese coolie corps, with a due proportion of commissariat and medical staffs, under the command of Brigadier-General Reeves, was embarked at Hong-Kong on the 1st April, and directed to rendezvous at the island of Kingtang, opposite to Chin-hai and to the mouth of the Ningpo river. The French contingent accompanying it consisted of a couple of hundred of marine from Canton.

Tinghai was peacefully occupied on the 21st of April, a guard of 50 men of each nation landing and occupying the custom house and Joss House hill. The granite batteries of the island were unoccupied. The hills surrounding Tinghai run down to the sea at points, 1 mile to the west and $1\frac{1}{2}$ miles to the east of Joss House hill respectively. A spur runs out from the western range of hills into the town itself, the wall passing over a considerable portion of it (no ditch), rendering its attack, if necessary, from this side, easy, as a column of troops might advance from the westward and north-westward under cover, and command the interior of the town and enfilade the neighbouring portion of the walls. The town is surrounded by a wet ditch; insignificant flanking defences occur at every 100 yards. It is unsuited for billeting any considerable force; about 1,200 men were accommodated in the various yamuns and public buildings; the 67th Regiment remained on board ship; one of the transports vacated by the 99th was turned into a hospital.

The French held the north gate and temple of Poo-tsze, about 1 mile in advance of it.

The arm-stores, two-storeyed buildings with a small yard in front and enclosed by high walls, containing stores of cannon, mostly 12 and 18-pounder carronades, brass guns, spears, gingalls, military equipment, &c., were taken possession of. The city was governed by commissioners appointed to assist the civil mandarin.

The harbour gives good shelter.

On the 24th of April, Sir Hope Grant visited the island of Poo-too, with a view to discover its value as a sanatorium.

Poo-too visited.

The island is provided with a rudely constructed, but substantial quay, formed of granite, from whence a paved roadway, 10 to 12 feet wide, lead to the temples. The island is beautifully diversified and well adapted for the formation of a sanatorium upon it, having in its many temples good accommodation for 2,000 invalids. It did not become necessary to use it as such.

It has no harbour, and the anchorage there is not good.

In May and June considerable alarm was felt in Canton, the Tai-ping army being reported to be within 60 miles of it.

Garrison of Canton, &c.

Our force stationed there consisted of the 87th Fusiliers, two regiments of Bombay Native Infantry, some engineers, artillery, and a strong European military police. They held, in conjunction with the French marines ashore, all the commanding points in and round the city; several heavily-armed gun-boats lay opposite to it in the river.

A large number of the refugees from the surrounding country were employed in the preparation of the site for the new foreign settlement of Shamien.

From the 24th April to the beginning of May troops arrived at Hong-Kong almost daily from India. No transport agent was appointed until May 30th; the want of such an official acquainted with the requirement of troops on board ship caused much expense and loss of time.

The siege train, which arrived on the 30th May was so stowed away as to be difficult of access at the commencement of the campaign.

Towards the latter end of May all preparations for the campaign in the

Organisation of the north were completed and the troops embarked, the land forces. army being organised as follows:—

The 1st Division, consisting of the 1st Regiment (Royals), 2nd Regiment (Queen's), 31st Regiment, 60th Rifles, 15th Punjab Infantry, Loodiana Regiment, Lieutenant-Colonel Barry's and Captain Desborough's Batteries of Royal Artillery, Lieutenant-Colonel Fisher's Company of Royal Engineers (10th),—under the command of Major-General Sir J. Michel, K.C.B.

The 2nd Division, consisting of the 3rd Regiment (Buffs), 44th Regiment, 67th Regiment, 99th Regiment, 8th Punjab Infantry, 19th Punjab Infantry, Captains Moubray's and Govan's Batteries of Royal Artillery, and Major Graham's Company of Royal Engineers (23rd),—under the command of Major-General Sir R. Napier, K.C.B.

The Cavalry Brigade, consisting of 2 squadrons of the 1st or King's Dragoon Guards, Probyn's Horse (1st Sikh Cavalry), Fane's Horse, and Captain Millward's Battery of Royal Horse Artillery,—under the command of Brigadier Pattle, C.B.

There was also a battery of mountain guns manned by Madrasis, about 250 Madras Sappers and Miners and a small siege train, with Major Pennycuik's Company of Royal Artillery.

The total amounted to 14,000 of all ranks. Our hired transports

numbered 120 and our naval force consisted of 70 pennants, counting gun-boats.

Several fine steamers had been fitted out as hospitals under the superintendence of Dr. Muir, C.B., Principal Medical Officer.

Interpreters were attached to each division and department, who were most useful in establishing markets, aiding the commissariat, &c.

Ample stores of camp equipage, &c., together with all requisites for an army in the field, were sent north along with the troops.

The sailing transports left Hong-Kong about the middle of May; the cavalry and horse batteries of artillery were towed by steamers, leaving the harbour in June.

In March, April, and May, the north-east monsoon blows down the coast of China, dying away, however, towards the end of May, veering round then and blowing from the north-west. To tow large transports against the monsoon is out of the question.

An attempt was made to start the towed transport on the 1st June, but without success, the weather being too boisterous. On the 8th all the transports again weighed anchor and put to sea. In case of bad weather Lam-yit island was named as the point of rendezvous.

On account of the capture of Soochow by the Tai-pings, a battalion of marines, the Loodiana Regiment of Sikhs, and the 11th Punjab Regiment occupied the approaches to Shanghai, the north gate, a Joss-house on the Soochow creek, and the Ningpo guild-house, with the view of defending it, if necessary.

The plan of operations agreed upon was, that the French should rendezvous at Chi-fu. The Shantung province is rich in cattle, of which (and of draught animals in particular) they were much in want. During the operations a dépôt was to be left there.

The British were to rendezvous at Talienwan bay. Wei-hei-wei was also thought of as a suitable place. The beach there is steep and looks as if well beaten by waves occasionally. Stretching inland is a belt of sand 100 yards deep, and then cultivation up to the city walls, about 500 yards distant. Running streams are rare, and wells even scarce. There is little wood. Provisions are scarce; the country around is hilly in all directions; its harbour is open to both north-east and south-west winds.

The British disembarked at Talienwan on the 28th June.

Talienwan bay is about 8 miles from north to south, and 13 miles from east to west, having within it a series of smaller bays, known as Victoria bay, Hand bay, Pearl bay, Odin bay, Bustard cove, where the shelter is good. The shores are everywhere enclosed with barren-looking hills averaging 200 to 700 feet in height; trees are rare and of small size. Running streams afford a water-supply sufficient for a small force; there are also wells in all the villages, and water in most places is near to the surface. It is colonised by emigrants from Shantung, and Shansi. Odin bay can be easily defended, and was, on this account, selected as the position for the dépôt to be left there.

Water there is plentiful. Chin-chow is the chief city in the vicinity. It shut its gates, and entry was not insisted upon. Had it been insisted upon, the collection of supplies would have been facilitated.

There is a great want of firewood all along the coast.

The 1st Division encamped (in bell tents) to the west of Victoria bay; the 2nd Division at Hand bay; the cavalry and artillery at Odin bay; the Military Train at Bustard creek and at a small stream falling into Victoria bay.

Markets were established in each bay, where a fair quantity of meat and vegetables were brought in daily for sale. Sheep and goats were purchased at $2\frac{1}{2}$ dollars and dollar apiece, respectively. Some of the larger cattle gave from 500 to 600lbs. of beef. Agents were sent round to the villages inviting supplies, which come in plentifully, especially to Odin bay.

There are very fair roads leading inland from many of the coast villages, which, during dry weather, would be practicable for guns. Wheeled conveyance is not very extensively used by the people, but there are some carts in every village.

Mules form the chief means of transport; they are very fine, but not in any very large numbers.

Chi-fu is preferable to Talienwan as a place for the organization of an army, being situated in a far more productive part of the Empire. The province of Shantung is famous for its mules and cattle. Water at Chi-fu was sufficient for the force there only.

At Talienwan on the 3rd July the temperature in the shade was	71°
6th	74°
" from 6th to end of month "	" 72° to 79°
" 7th July the temperature in tents "	" 90°

During its occupation the health of the troops was good.

Leaving behind them their depôts of stores at their respective places

Plan of operations. of rendezvous and sailing northward on the same day, the French were to effect a landing at Chi-K'ou, the English at Pehtang, and a simultaneous advance made against the Pei-ho forts. It was hoped that with their capture the Court of Peking would agree to the terms offered. A peculiarity of this war was that the invaders were compelled to be more careful of the true interests of the Imperial Government than they were of them themselves, lest a severe defeat might endanger the entire fabric of government. The successes of the Tai-ping rebels and their occupation of Nan-king, the southern capital, made a defeat all the more likely to prove fatal to His Celestial Majesty.

The French, after a reconnaissance of the coast, not finding sufficient water for their ships off Chi-K'ou desired to land with the British at Pehtang.

The delay at Talienwan was due to the backwardness of the preparations of our allies.

On the 21st July the final re-embarkation commenced, on the 25th the ships got into the positions assigned to them, and on the 26th all weighed anchor,—all told, 150 to 160 sail.

Sailing of the force
for the Pei-ho.

The depôt left at Odin bay consisted of 4 companies of 99th Regiment, 417 men of the 19th Punjab Infantry, 100 men of the Royal Artillery, with 6 guns, besides 200 Europeans and 100 Indian soldiers in hospital.

The coolie corps had already proved of great use. Desertions occurred amongst them, but, the deserters being ill-treated by their own country-people, it soon ceased, and they became bound to the force by the strongest of ties, *i.e.*, that of the fear of their own countrymen.

By the 28th July all the fleet had arrived at the rendezvous off the Pei-ho. The gun-boats towed a number of Chinese junks (22 captured at Chusan), with 10 days' provisions and fuel for the whole army on board. On the 30th July the fleet bore inshore, and anchored about 9 miles from it.

Orders were issued for the force to land on the 31st, but, the day proving too boisterous, it was postponed till the 1st August. Rain fell during the morning of the 1st. The tide was full at 4 P.M., enabling our gun-boats drawing 6 feet to cross the bar at 1 P.M.

The 2nd Brigade of the 1st Division, with a rocket battery and one of 9-pounders, formed the landing party, and were towed in troop-boats, flat-bottomed and 30 feet long, constructed at Canton, by the small gun-vessels, each towing six launches and each boat containing 50 men. Each man landed with three days' rations. The French landed with six days' rations.

Meat rations carried in a haversack did not keep fresh for 30 hours. At half-past four o'clock, 200 of the 2nd Queen's and an equal number of French put off in boats; but, the tide being unusually high and kept up by the wind, they could not get within about 100 yards of the shore. After a delay of half an hour the troops landed, about 1 mile seaward of the South fort, in water and mud knee-deep, which continued so for the first half mile, beyond which, after traversing 400 or 500 yards of deep, sticky mud, a hard surface of mud was reached. In no part did the men sink in above the knee.

By 6 P.M. the brigade had landed, the Rifles forming on the right, the 15th Punjabis in the centre, and the Queen's on the left. The French force consisted of the 101st and 102nd Regiments, the Chasseurs, a few troopers mounted on Japanese ponies, and some rifled cannon,—in all some 5,000 men,—the troops pushed on towards the causeway leading to Hsin-ho, on which they bivouacked for the night, it not being as yet ascertained whether the village of Pehtang, close at hand, was occupied or not, and it being desirable to save the town the horrors of a sack.

The landing was altogether unopposed; not a shot was fired from the forts.

During the night it was ascertained that the village and forts were unoccupied. The Chinese had contemplated the possibility of a landing being effected at Pehtang, but chose to trust rather to the natural difficulties of landing than to artificial defences.

Under cover of darkness a party of the enemy's cavalry came close up to our picquets and caused an alarm.

The admiral steamed up the river past the forts at midnight, intending, if necessary, to open fire the next morning.

On the morning of the 2nd August, the landing was continued and the troops moved into Pehtang, the French occupying the river-side half of the town, the British the land-side half. The guns of the fort had been removed to Taku. Considerable quantities of hay, with forage

Pehtang occupied. sufficient for the requirements of our force during its stay at Pehtang, were found here; water was the great difficulty. For the first two days that which was found in the houses was ample, and in quality was not bad; after that, water-boats were sent 4 miles up the river to fill at low-tide. A gallon a day was issued per man as a ration. Alum is required to precipitate the mud which it contains. The fort had been mined and infernal machines buried under its terreplein. Under the joint superintendence of the navy and engineers wharfs and piers (4) were constructed, and the landing of stores rapidly pushed on, the gun-boats in this service proving invaluable, although the shallowness of the water over the bar was such that they could make often but one trip a tide, the fleet laying off shore some 8 miles. The coolie corps, also, numbering about 2,500, was of the greatest use, and willingly performed most arduous service.

On the 3rd and the 9th reconnaissances were pushed in the direction of Hsin-ho, whereby it was ascertained that firm ground existed to the right of the causeway leading to that place, which was intrenched. Owing to the rain which fell almost daily, the streets of Pehtang were ankle-deep in mud. It rained both on the 10th and 11th of August; on the 12th the advance was made from Pehtang.

It was ordered that the 2nd Division with the cavalry brigade should move by the right of the causeway, and turn the left of the enemy's position at Hsin-ho, whilst the 1st Division and French advanced by the causeway against its front.

Advance on Hsin-ho
(cavalry outpost).

At 4 A.M., the 2nd Division commenced filing across the only bridge leading out of Pehtang. The ground, on account of the recent rain, was very deep, and the artillery experienced the utmost difficulty in reaching the higher and firmer ground. Three ammunition wagons stuck immoveably and had to be abandoned.

Owing to the slow progress of the cavalry over the heavy ground, the 1st Division did not commence to file over the bridge till a quarter past seven o'clock; the whole force had not crossed till some minutes after ten, the main body of the French being even then in the town. The 99th and baggage parties from each regiment held the village.

When the 2nd Division had marched 3 miles to the right of the causeway, line of battle was formed, the cavalry forming on the right in échelon.

The Tatar cavalry attacked bravely, being chiefly repulsed by artillery fire (fifteen Armstrong field cannon), those coming to close quarters

being met by the Sikh cavalry, who readily scattered them and pursued hotly; but their horses not having galloped for months, the hardy Tatar ponies kept ahead of them. Stirling's half battery, being unable to follow the movements of the cavalry on such heavy ground, had been left in rear with an escort of 30 of Fane's Horse. Seeing their opportunity, 100 Tatars charged the guns, but were put to flight by the escort. Their commanding officer, Lieutenant Macgregor, was severely wounded.

The 1st Division, having arrived within 1,400 yards of the Hsin-ho position, deployed, the French to the left, our troops to the right. The guns of both nations opened fire at a distance of 1,000 yards, their fire telling upon the numerous bodies of cavalry in and around the works. After a rapid discharge of matchlocks and gingalls, they abandoned their intrenchments and fled.

The Tatar cavalry, 6,000 or 7,000 strong, armed for the most part with bows and arrows and spears, and only a small proportion with matchlocks, behaved on this, as well as on subsequent occasions with courageous endurance. The loss of the enemy was variously estimated at from 100 to 500 men. Hsin-ho was a cavalry outpost; such also was Tang-ku.

Our casualties amounted to 3 officers of the Irregulars wounded, 2 sowars killed, and 10 or 12 wounded, together with about 12 Europeans. The village was surrounded by a strong mud wall and a wet ditch.

The armies halted at Hsin-ho; the cavalry and 2nd Division to the south-west of it, with a fine open plain in their front, and their left resting on two tidal canals running to the south of the village; the French and 1st Division encamped to the south and east of the village. Large stacks of forage were found on the ground, and plenty of corn in the town for the horses.

A ditched causeway led from Hsin-ho to Tang-ku, the next fortified village towards Taku, to the north of which the ground was swampy and impassable, but hard to the south. Round Tang-ku there was a castellated mud wall, about 10 feet high and 8½ feet wide at the top, provided with a banquette. There were five Tatar camps, all walled in and ditched round, within the space between the earthwork and the village. Along the faces of the work, facing Hsin-ho and Taku, were numerous *barbettes* for guns and gingalls. These faces were about 1,300 yards long; the river face was of the same length, but open. The northern face, 800 yards long, mounted no guns, being fronted and protected by swampy ground. Two deep ditches, 50 yards distant from each other, ran round its three sides, the river being on the fourth; one of the ditches was close under the mud wall. Two gateways, facing the west, gave access to the causeways from Hsin-ho and Pehtang, and one on the eastern face, to the road leading to the bridge of boats connecting Tang-ku and Taku.

General Montauban wished at once (i.e., on the 12th) to attack the works at Tang-ku and moved towards it, supported by a couple of British battalions, but Sir Hope Grant considering the attempt to be unwise and not co-operating in force, he did not push his advance.

On the 13th, reconnaissances showed that the enemy's field troops had retired beyond the river. On the night of that day a trench was dug at 480 yards from the works, extending from the Pei-ho for a distance of some 200 yards along its front. Several canals were bridged during the day to facilitate the attack on Tang-ku.

On the 14th, the 1st Division led the attack against the works, with the 2nd Division in reserve. Our right flank rested on the Pei-ho, the south bank of which was marshy and covered by a belt of reeds for some hundreds of yards, giving cover from view. An annoying, but harmless, fire was opened from a small battery, and some tombs on that bank, which were, however, soon silenced by our artillery.

The French advanced on the British left, their left resting on the Tang-ku causeway: the whole of the artillery, the French having 12 and we 24 guns in line, opened fire at 900 yards, the enemy replying from their guns, 14 in number, and numerous gingalls. The 60th Rifles, having occupied the trench dug during the previous night, the artillery advanced to within 450 yards of the work. A fire of rockets was opened against the attacking force from the opposite bank without inflicting any loss. The work was stormed by the men of the 60th, followed by the Royals and the 31st Regiment, at its extreme left flank, the French bridging the ditches and storming shortly after, the whole then advancing to the east of the village.

Many of the Chinese gunners were found lashed to their guns. The whole length of wall mounted 45 pieces of artillery, of which 16 were of brass; they were of various calibres from 4 and 6 to 24-pounders, and were well made. The number of the Chinese within the works was estimated at from 2,000 to 6,000 men. Our loss amounted to 3 wounded; the French had some 12 men wounded.

The 2nd Division occupied the intrenchments, the 1st Division returning to its camp between Hsin-ho and the Pei-ho.

Detachments occupied posts on the Pehtang road, and the cavalry the post at Chah-pung. The cavalry brigade encamped to the west of Hsin-ho; the French in and around the south side of Hsin-ho.

The days were cloudy and the weather pleasant.

An extraordinarily high tide occurred on the 16th August, which swamped the camp of the 1st Division.

The Chinese withdrew their floating bridge over the river.

The troops remained in the above positions till the 20th, awaiting the collection of 10 days' provisions and the arrival of the engineers' park and heavy guns at Tang-ku, where a depôt was formed. During this time several flags of truce passed, the enemy sending back some prisoners (1 European, 1 Madras sapper, and 18 coolies) taken by the Tatars on the day of our advance, and who had been sent to Tien-tsin.

The engineers of both armies commenced the construction of a bridge across the Pei-ho close to the camp of the 1st Division, there about

270 yards wide. For this purpose junks were collected, and the materials, for planking and superstructure, brought from Hong-Kong used. The boats, about 8' wide, were decked over and connected by baulks stretching from gunwale to gunwale, thus giving a waterway of 12'; the tide rose from 10' to 11' and often ran at the rate of 6 knots an hour.

From Tang-ku to the nearest fort on the north bank is under 2 miles. This fort overlooked the similar one on the south bank, enfiladed the whole length of the great southern one, and took all the sea defences of the large northern one in reverse. The Commander-in-Chief and Sir Robert Napier both considered it to be the true point of attack. The French desired to contain the northern forts and to attack the southern forts in force, at the same time cutting off the retreat of their garrisons from Tien-tsin. Sir Hope Grant, with the small force at his command, considered such an enterprise to be too hazardous, and feared to leave his line of communications with Pehtang open to the large force of Tatar cavalry in the field, with the northern forts as a *point d'appui*. On the 18th the French established a post on the opposite bank (right) to protect the formation of the bridge.

By the night of the 20th August a road had been constructed towards the North fort; and the necessary bridges and causeways and batteries for the guns constructed. The British had 16 guns and 3 mortars in battery, the French 4 guns, all of which opened fire on the 21st, the enemy responding from all available guns.

Four of our gun-boats, the *Janus*, *Drake*, *Clown* and *Woodcock*, and two of the French, took up positions within the range of their guns and outside that of those of the forts, and shelled them. No other gun-boats co-operated. The river entrance had been closed by rows of booms, hawsers, piles and sharp-pointed stakes of iron, each several tons in weight. Rows of stakes protected the sea-fronts of the forts, rendering their attack from this side next to impossible. The great strength of the Taku works consists in the locality in which they are situated. All the guns in the embrasures had been provided with timber blindages.

The Tatar huts within them were made of reed fascines, bent so as to form a semicircle; these, placed over a framework of wood, were afterwards coated with mud. The ends of the huts were of planking, and in them were constructed doors and windows.

The attacking force mustered 2,500 men, and consisted of a wing of the 44th, a wing of the 67th, supported by the other wings of those regiments respectively; the Royal Marines, Graham's Company of Engineers, 200 Madras Sappers,—the whole under Brigadier Reeves. The French force consisted of 1,000 infantry and six 12-pounder rifled cannon.

The artillery was disposed as follows: A French 24-pounder battery of 6 pieces, one English 8-inch gun, and 2 Armstrongs were so planted as to play on the inner south fort. Two Armstrong guns and two 9-pounders were to fire from Tang-ku at an intrenchment across the

river. Three 8-inch mortars, an Armstrong battery, two 32-pounder guns, two 8-inch howitzers, two 9-pounder guns, four 24-pounder howitzers, and a rocket battery, at close ranges, 600 to 800 yards, played on the inner north fort. The Chinese returned a heavy fire, but at too great an elevation.

About 6 A.M. one of the magazines exploded in the fort attacked; by 7 A.M. all its heavy artillery was silenced, and the columns of attack formed, the French assaulting the angle of the work resting on the river, the 44th and 67th Regiments advancing straight to their front against the gate of the work.

The pontoon bridge required to bridge the ditch, manœuvred by the engineers and marines, could not be got into position, and the storming party waded across the muddy ditch, having water nearly up to their arm-pits. Two wet ditches ran along the face of the work, with the intervening space of 20 feet planted as thickly as close stubble with sharp bamboo stakes, which were also planted beyond the inner ditch along the berm. To cross these obstacles under fire was a most arduous and dangerous task. Showers of missiles of all sorts, from pots filled with lime to round shot thrown by hand, were showered from the work. The flanking fire from the upper south fort was very efficient, and it was during this period of the assault that the greatest loss was incurred. It was some time before a sufficient number of men had collected under the walls of the fort to risk an assault. The French got 3 or 4 ladders across the ditches, but at first failed in their attempts to raise them, the Tatars being most active in their close defence. Eventually the French by escalade, and a party of the 67th by assault, reached the top of the parapet about the same time; others entered by the gate, which had been blocked up with strong timbers, placed closely together in rows and inserted in the ground at the bottom. Two howitzers had been advanced to within 50 yards of the gate, and a space, sufficient to admit one man at a time, blown through it. The obstacles extending round the work, the garrison had no means of retreat, and those who attempted it lost heavily.

Preparations were at once made to assault the large (lower) northern fort, the 3rd Buffs and 8th Punjab Infantry being sent forward for that purpose from Tang-ku. The large heavy guns (two 8-inch howitzers) were advanced to the left of the captured work, and those in its cavalier turned upon it. The forts were 1,000 yards apart, a raised causeway running between them, with wet ditches on either side.

A party sent out to reconnoitre the fort was fired upon, when suddenly a white flag was hoisted in the large southern fort and immediately afterwards in the others.

All firing ceased about 9 A.M. The terms of capitulation offered not being acceded to, our troops, 3rd Buffs and 8th

Lower north fort occupied. Punjab Infantry, at 2 P.M. advanced and occupied the lower north fort, its garrison of 2,000 men surrendering without firing a shot, and, after having thrown away

their arms and disencumbered themselves of their uniform, by which means a Chinese soldier can readily convert himself into a peaceful citizen, they were at once liberated and dispersed.

This fort commanded the large south fort, and was very strong on the sea-side. Heavy rain now began to fall, so that it was found impossible to remove the heavy guns, and the return march to the flooded camp was a most tedious one. The mud, however, rapidly hardens under the influence of a hot sun, if not previously worked up into slush.

On the British side, 22 officers were wounded; 22 men were killed and 156 wounded. The French had 150 casualties; some of their officers were killed. The enemy lost about 2,000 men, amongst them being the General commanding the upper north fort.

The Cantonese coolies behaved with great bravery, standing up to their necks in water in the ditches, holding the ladders over their heads to enable the French storming party to cross.

Before nightfall Governor-General Hung had signed a capitulation, surrendering all the country and strong positions up the river, as far as Tien-tsin, including that city itself.

On the 21st the gun-boats removed the river obstructions, and in a few hours opened a passage for themselves.

In the Taku defences some 500 pieces of cannon were found. The village contained a forge and shot factory, besides large stores of powder, shot, sulphur, &c. Admiral Hope, with some French and English gun-boats, pushed on to Tien-tsin on the 23rd, and on the 25th

Lord Elgin and the Commander-in-Chief followed, whilst the 1st Royals, the 67th Regiment, and a battery of artillery were conveyed there in gun-boats.

The cavalry commenced their march on the 25th, and moving up the left bank of the river, passed through Cheun-leang-ching, over open plains of grass, and reached Tien-tsin in two days. The 1st Division moved along the right bank, the French marching by the other; the 2nd Division followed the 1st; the 3rd Regiment was left to occupy Taku and the Rifles to protect the Hsin-ho bridge.

The siege guns and ammunition were re-embarked, and all spare baggage collected in the south fort. The three batteries of

Royal Artillery and the Madras Artillery attached to the siege train, took up their quarters in this fort; baggage and stores were, as required, forwarded to the front by the naval authorities.

The troops marched with three days' rations of everything except meat and rum, which were carried by the commissariat. Ammunition at the rate of 100 rounds per man accompanied the force, the remainder being forwarded by river.

The roads traversed were good cart-tracks, over hardened mud; after heavy rain, they would be impassable to heavy traffic; along them there was no good ground found for encampments.

At Pei-tang-k'ou were four forts sweeping a reach of the stream. This position was intended as a second line of defence, and the works round Tien-tsin as a third, but the rapid advance of the gun-boats prevented

Advance on Tien-tsin.
Depôt of stores.
Second and third lines of defence.

the army re-organising there for resistance. The tall Indian-corn and millet, averaging 6 feet to 10 feet in height, prohibited all distant view. There were no wells in the river-side villages ; the river water, purified by alum, was used for drinking. Ice was plentiful along the route. Supplies of all sorts were sold to the troops at a moderate cost, and there was an abundance of grain for the horses. Cattle eat millet greedily.

Junks filled with commissariat stores were towed up the river.

The French encamped near the river on its left bank, the British on the plain, beyond the line of works, to the south of the city.

Chinese commissioners were appointed to provision the force.

Our commissariat found it necessary to impress as many transport animals and carts as possible, although compulsion was resorted to only when all other means failed.

At Tien-tsin Indian tents brought up by river were issued, the bell tent not giving sufficient protection against the hot sun ; bell tents only could be carried by the land transport.

Shortly after the arrival of the force at Tien-tsin, Kweilung, Hang-ki, and Hung-fu were appointed Commissioners for the arrangement of affairs, Messrs. Wade and Parks acting for the allies. The great desire of the Chinese Commissioners was that the allies should show their confidence by the ambassadors proceeding to Peking with a nominal escort. After wasting eight days of most valuable time, it was found that the Chinese Commissioners were not armed with the necessary powers to treat, and that their only object was to occasion delay, in order that winter might overtake us during our operations.

Lord Elgin now requested the allied commanders to advance on Tungchou.

The 1st Division reached Tien-tsin on the 2nd September, the cavalry on the 26th August ; the 1st Royals, 67th Regiment, and some guns on the 25th August, the 2nd Division on the 5th September.

Soon after the fall of the forts, the 44th Regiment was despatched to Shanghai, which place was threatened by the Tai-ping rebels.

Odin bay in Talienwan was abandoned, as, from the abundance of supplies available on the spot, it was no longer required as a commissariat depôt, and the 19th Punjabis and the Royal Artillery were ordered to the front.

The means of land transport were limited ; no information existed as to the supplies to be procured *en route*, it was, therefore, determined that the troops should advance by detachments.

Brigadier Reeves, with the 99th Regiment, 200 Marines, Barry's and Stirling's Batteries, the King's Dragoon Guards, and Fane's Horse, were directed to

Advance on Peking.

start on the 8th September. The French about 3,000 men, on the 10th; Sir John Michel with the 2nd Brigade, Desborough's Battery and Probyn's Horse, on the 12th; the 2nd Division to halt at Tien-tsin in readiness to advance. The first march out of Tien-tsin was to Hook'ou, the second to Yang-tsun. See road report No. 1.

Taking advantage of a violent thunderstorm, the Chinese drivers collected before leaving Tien-tsin, frightened by the threats of Government underlings, deserted during the night, rendering an advance on the 11th impossible. No other land carriage being available, several junks were seized and the baggage transported by water.

On the 11th September negotiations were again entered into by Tsai, the Prince of I (or E), to which Lord Elgin made answer that he would sign no treaty before

Negotiations.

reaching Tung-chou.

On the 13th September the British reached Hoo-see-wu, the largest village between Tien-tsin and Tung-chou, and about equidistant from them (40 miles); on which account, and because of the uncertainty as to supplies procurable above it, and the nature of the river, it was determined to establish there a depôt of stores and a large field hospital.

The inhabitants, who hitherto had been friendly along the route and remained in their villages, now deserted them on our approach and shunned all communication with us.

The committee of supply deputed at Tien-tsin to provision the army during the march fell short of their engagements. In searching the houses *en route* much grain was found, but labourers to grind it were scarce.

Hoo-see-wu was deserted, but grapes, vegetables, yams and sweet potatoes were found there in abundance. The village is surrounded by peach, apple, and pear trees. The water of the river here scarcely 50 yards wide, is clear and good; wells now become numerous in the district to the northward.

Hoo-see-wu.

On account of the difficulties of land transport, Admiral Hope organised flotillas with a strength of from 60 to 70 junks in each; and English sailors lived on board each junk, and each flotilla was under a commander, aided by a due proportion of naval officers.

Transport.

The siege train was floated up the Pei-ho, upon pontoons by tracking.

Halt.

In order to collect the troops a halt at Hoo-see-wu became indispensable.

On the 13th September, Messrs. Wade and Parkes, with an escort of 20 cavalry, proceeded to Tung-chou to deliberate with their "Excellencies" the Chinese

Negotiations.

Commissioners, when it was finally settled that the allied forces were to advance to within $5\frac{1}{2}$ (1½ miles) of Chang-kia-wan, and halt there,—Lord Elgin, with an escort of 1,000 men, proceeding on to Tung-chou, where the convention was to be signed, and thence to Peking with the same escort, for the purpose of ratifying the old treaty.

On the 16th September, Sir J. Michel's force arrived at Hoo-see-wu, and on the 17th the army and 1,000 French marched to Ma-tow, leaving at Hoo-see-wu the 2nd Regiment, 3 guns and 25 cavalry, together with Lord Elgin's escort of 100 irregular cavalry.

Advance.

A detachment of cavalry occupied Yang-tsun. On the 18th September, the 2nd Regiment, having been relieved by the 60th Rifles, joined head-quarters. Early on the 18th, Messrs. Loch and Parkes, Lieutenant-Colonel Walker, Assistant Quartermaster General to the Cavalry, Assistant Commissary General Thompson, Mr. Bowlby, the *Times* correspondent, Mr. de Norman, and Attaché to our Minister at Shanghai,

Envoys and escort, &c.,
captured by treachery.

Lieutenant Anderson, 5 men of the King's Dragoon Guards, 21 sowars of Fane's Horse and one of Probyn's, proceeded to meet the Commissioners to arrange for the reception of Lord Elgin and the camping of the force. *En route* they saw unmistakeable evidence of the presence of a large force. Notwithstanding these indications and warning that treachery was to be expected, Mr. Parkes at Tung-chou divided his small party, Mr. Bowlby, Mr. de Norman, Lieutenant Anderson, and 17 sowars remaining at Tung-chou, whilst he, Mr. Loch, Colonel Walker, Assistant Commissary General Thompson, 5 men of the King's Dragoon Guards, and 4 sowars returned towards Ma-tow. Arrived there, and seeing a large force of the enemy in occupation of a strong position, he, taking with him Trooper Phipps, King's Dragoon Guards, returned to Tung-chou to remonstrate. Mr. Loch and three sowars galloped in *with letters* from Mr. Parkes, announcing that all points have been satisfactorily arranged with the Imperial Commissioners, and to report *by word of mouth* the presence of a large army in the immediate vicinity. Colonel Walker with the escort remained on the ground to examine the enemy's position.

The force that marched from Hoo-see-wu on the morning of the 18th consisted of the cavalry brigade, with Stirling's half battery, two field batteries, the 2nd Queen's, the 15th Punjab Infantry, Royal Marines, the 99th Regiment, with detachments of Engineers and Military Train. One French regiment, and one field battery followed.

The allied force, on approaching the village of Le-urh-tsze, halted on finding itself in the presence of a large army. It was whilst so halted that Mr. Loch rode in to report the state of affairs. The presence of Mr. Parkes and his party at Tung-chou and of Colonel Walker and his party, within the enemy's lines, was a great drag on the allied movements. Mr. Loch and Captain Brabazon, Deputy Assistant Quartermaster General to the Artillery, volunteered to return to Tung-chou in order to direct their return. At 8 A.M., accompanied by two sowars carrying a flag of truce, they started. Our cavalry moved to the flanks to observe the enemy, who were attempting a surrounding movement.

Colonel Walker and his party, acting with great caution, refused to dismount, and on indignities being offered, his sword snatched from its scabbard, &c., he directed his party to charge through the enemy's

force. This they did, with a loss of only two men wounded and one horse shot.

This Chinese intention was to induce the allies to encamp, and then to fall upon them with their whole force and butcher them. The action of Colonel Walker precipitated matters.

This occurred between 10 and 11 A.M. The action now became general.

The right of the Chinese position rested on the old walled-in town of Chang-kia-wan, and its left upon the Pei-ho, a distance of 3 or 4 miles; in its rear was the Seaou-ho stream, fordable everywhere. Batteries had been thrown up, *i.e.*, at the village of Le-urh-tsze, about 1,000 yards from the Pei-ho, along the raised Tung-chou causeway and at other points (*see plan*), the whole being flanked by a battery constructed at right angles to the general front about one mile distant from the suburb of Chang-kia-wan; another such work existed also on the left flank. It thus closely resembled a front in modern fortification; it mounted about 60 pieces of cannon, besides which were field-pieces drawn by ponies.

The French, numbering 1,000 men, with a battery of artillery and a squadron of Fane's Horse attached, on the right of the allied attack, advanced to its front, the cavalry sweeping round to protect its flank and doing excellent service. The number of villages on this flank rendered it very strong, and the Tatars made there an obstinate resistance, losing largely. Sir Hope Grant disposed a 9-pounder battery on some high ground to the right of his line of attack, with Fane's Horse and a squadron of the King's Dragoon Guards in support; the 99th Regiment was directed to advance up the road against the village in our front, supported by two 9-pounders; the 15th Punjab Infantry, with two Armstrong guns, took ground to the left; the 2nd Regiment (Queen's) with Stirling's 6-pounder battery and the cavalry, were ordered to make a wide flank movement to our left; the remaining regiments in reserve; the 99th in the right centre.

The 15th Punjab Infantry carried the batteries flanking the enemy's line, whereupon the two Armstrong guns with it were sent to aid the movement being made to turn the enemy's right, the force carrying out which, under Sir J. Michel, swept round to the south of Chang-kia-wan, the 15th Punjab Infantry and 99th Regiment advancing through that village.

The enemy gave way at all points; the pursuit was carried to 2 miles beyond Chang-kia-wan.

The enemy suffered severely, leaving some 80 guns in our hands. Their force was estimated at 80,000 men. Our force engaged was, as will be seen, insignificant. The British loss was 1 killed and 19 wounded; the French loss, 2 killed and 14 wounded. The village of Chang-kia-wan was given over to loot. The troops occupied camps in its vicinity and the houses of the town.

The roads leading towards Tung-chou and Peking are deep, hollow ways, so deep in places that cavalry might march along them unperceived by people in the fields close by. The country generally in the Peking vicinity is difficult for both artillery and cavalry.

Neighbouring country.

On the 19th September, Mr. Wade, under a flag of truce, proceeded to Tung-chou, a large city, and ascertained that the prisoners, so perfidiously taken, had been removed inland. It was arranged that this important junction of communications should be spared, the inhabitants being required to aid us in procuring supplies, transport, &c.

On the 20th September a cavalry reconnaissance showed the enemy to be in force about Pa-li-chiao. On the 21st their position was attacked, the baggage being previously parked in a village close by. The French,

Action at Pa-li-chiao. 3,000 strong, advanced against Pa-li-chiao (bridge

over the U-liang-ho, at a point where the paved road from Tung-chou crosses it), the British attacking to their left, and the cavalry making a wide turning movement still further to the left, so as to drive the enemy's right upon their centre and force them to cross the canal at the points against which the allied advance was being made. The enemy displayed a large force, and with their cavalry endeavoured to turn the left flank of the allies, their infantry occupying the numerous clumps of trees and enclosures which bordered the canal. The enemy gave way at all points.

With reference to the firing of the troops in this action, Lieutenant-Colonel Wolseley remarks—

"An infantry battalion close by was ordered by its Brigadier to form square and in that formation fired volleys at the advancing enemy (Tatar cavalry) without, I believe, killing a man of them. Our old soldiers, untrained in all the minutiae of position and judging distance drill, and armed with the much abused old Brown Bess, could not certainly have done less damage."

Our cavalry did great execution (over a most difficult country cut up by hollow roads) in this, as in all other actions of the war: the artillery also fired with good effect, every Armstrong shell bursting amongst the enemy and bringing them down in clumps.

The cavalry (King's Dragoon Guards), 3 Armstrong guns, 99th Regiment, and Royal Marines moved to the left in pursuit, capturing many standing camps and 18 guns. The pursuit ceased about 6 miles from Peking, our force returning to the U-liang-ho.

The British loss during the day was only 2 killed and 29 wounded; the loss of the French was also slight. The enemy are supposed to have numbered 50,000 men, chiefly cavalry.

To await the siege guns, which were with difficulty got over the river shallows, and the arrival of reinforcements from the rear, the force halted along the U-liang-ho, it being considered that for a small force of the allies to press on to Peking without being in a position to force their demands would have been to place them in a false position.

On the 29th September these siege guns arrived, and by the 3rd of October all reinforcements had come up, the regiments advancing by double marches from Tien-tsin.

Distribution of troops.

The garrison at Tien-tsin consisted, at this time, of a wing of the Buffs, 500 Marines landed from the fleet, 2 batteries of Royal Artillery, Madras Artillery, and 25 Irregular Cavalry. A battalion of Marines and 400 French soldiers were posted at Tung-chou, the north gate of which was held, and between which point and Tien-

tain regular flotilla service of country boats were established. Tung-chou soon became a large store dépôt, from whence 10 days' supplies were forwarded to the front in carts and wagons.

At Chang-kia-wan a post of 100 French, 1 officer, and 10 sowars was established. In consequence of armed villagers firing upon orderlies carrying mails and despatches, Ma-tow was burnt—an example which, accompanied by threats of like measures being adopted against all villages the inhabitants of which so behaved, had the desired effect of putting a stop to such practices.

Markets were established, where fowls, vegetables and fruits were obtainable at moderate prices.

The paved road which runs from Tung-chou to Peking was in such bad order that an unpaved one running all the way on the north side of the canal was selected. Traffic along the U-liang-ho is carried on with great difficulty on account of the number of weirs across it. This canal, furnished with water by mountain streams flowing through the grounds of Yung-mien-yuen and the ditches of Peking, discharges its surplus water into the Pei-ho over a fine weir, built of granite, now fast falling into decay.

At Pa-li-chiao a considerable number of mules and carts were collected, and, had the country been scoured and transport driven in, any reasonable amount might have been obtained, but all coercion was avoided as much as possible.

During the halt at Pa-li-chiao, light showers only fell in quantity sufficient to lay the dust.

In consequence of the good treatment shown to those villagers who had remained behind in their villages, the absentees began to return to them.

During this time many diplomatic notes passed between the Prince of Kung, the Emperor's brother, who had been appointed High Commissioner, and our camp, but Lord Elgin refusing to recognise Mr. Parkes and his party as prisoners of war, but as messengers under a flag of truce treacherously kidnapped, made their surrender a *sine qua non* before he would even suspend hostilities.

A protracted struggle was of all things to be avoided; winter was near at hand; our policy was not to so greatly weaken the imperial power that it might be easily overthrown by a rebel force; and, doubtless, the capture of Peking by any foreigner would be the most convincing of all signs that the Manchu dynasty had ceased to reign and lead to such an untoward result. The Chinese policy throughout was of the most vacillating nature, and that of men catching at every straw, to cause our withdrawal, and the signature of the Tien-tsin Convention to be contingent on the after-delivery of the prisoners; a policy caused no doubt by the general instructions given by their imperial master, to the effect that the barbarians were to be kept out of Peking, and to the knowledge that the one great law of expediency, which alone regulated the official dealings of His Majesty, rendered each innocent agent of his policy, open to a charge of treason. Their previous political training likewise caused

them to look upon our "ultimatum" as a lie, because they considered it not wise or prudent to speak the truth and to make known beforehand what it was meant actually should be done.

The Prince of Kung not having complied with our ultimatum, on the 3rd October the force advanced, crossing the canal by the bridge of boats constructed to enable it to do so, and took up a position and encamped a *cheval* off the paved road leading to Peking. A strong position had been selected wherein to park the baggage and siege train whilst operations were carried out against the main Chinese field force said to be under Sin-ko-lin-sin, and to occupy the north-east portion of the old intrenchment outside Peking.

On the 5th October the allies, over 10,000 strong, advanced in a line of contiguous columns over a very difficult country, and halted in a strong position to the north-east of Peking; each man carried three day's cooked rations; each regiment was allowed one cart for the officers' mess; all tents and baggage were left behind, the force bivouacking. The French moved to the British left. On the 6th the advance continued, the men's knapsacks being left under the protection of a small guard in a strong post formed by some high brick-kilns.

The advance was made across a very close country to the old intrenchment, which was entered at its north-east angle, our cavalry taking up a position on the main road which led out from the Te-sheng-men gate towards Jehol. The enemy observed the advance only with numerous bodies of cavalry.

The British bivouacked in the city suburb and along the road leading to the An-ting gate, around a large Llama temple, close to the Tatar parade ground. The position of our allies during the night was unknown. General Montauban, after entering the old intrenchment at its salient, being informed by Sir Hope Grant that the enemy had retreated and that he intended to push for Young-mien-yuen, made direct for that place, and meeting *en route* our cavalry, both marched to the village of Hai-tien, situated close by the summer palace and grounds of Young-mien-yuen; the French occupied the palace, our cavalry moving to the eastward of it.

Many roads lead from Peking to Young-mien-yuen, some paved; the best, although unformed, leads from the Sze-chi-men to Hai-tien. They pass through cuttings in the old intrenchment. This intrenchment varies in height; in places it is 40 feet high; it is in a bad state of repair; its width is sufficient to take artillery.

The French prior to the arrival of the British force had looted the Summer Palace. Prize agents were appointed, and the loot being sold by auction, realised 123,000 dollars.

The Prince of Kung accompanied the main Chinese army in its retreat leaving Hang-ki to conduct negotiations. By the 14th of October, of the 26 English and 13 French subjects treacherously captured under the most flagrant disregard of all international law, 13 English and 6 French had been sent back; the

remainder had been tortured to death with great cruelty, and an utter indifference of all feelings of humanity ;—placed in a kneeling position, their hands and feet were fastened together and they then thrown on their

Treatment of prisoners. backs, and guarded so, were exposed to the sun by day and the bitter cold by night without food or water, until delirium set in. Lieutenant Anderson's hands swelled to twice their natural size from the tightness of the cord by which they were bound ; mortification set in rapidly ; his fingers and nails actually burst, and worms, the usual consequence of undressed wounds, were generated about his hands and wrists in myriads ; before death the bones of his wrists were actually exposed. All the party were similarly treated, with the exception of Messrs. Parkes and Lock and a Frenchman, who were lodged in the common malefactors' prison of Peking, and Captain Brabazon, who is supposed to have been beheaded on the 21st September during the action fought on that day.

On the 9th October the French joined our forces facing the An-ting gate, and an ultimatum was forwarded to the Prince of Kung, requiring the surrender by noon on the 13th of one of the gates of the city if he wished to have it from bombardment.

Preparations for attack on Peking. A position for our breaching batteries, about 600 yards to the east of the An-ting gate, and within the high walls (16 feet) which surrounded the Temple of Earth, was selected. Our guns consisted of four 8-inch guns, four Armstrong guns (12-pounders), a battery of 9-pounders, and some mortars. The French were to co-operate with their heaviest field guns ; the breach was to have been made between the second and third flanking towers to the east of the An-ting gate.

By noon on the 13th October the An-ting gate was thrown open, and our troops entering the city occupied the walls extending thence to the Te-sheng-men and the south-east corner of the city.

By the evening of the 16th October the remains of all our ill-fated countrymen and comrades had been sent in to our camp with the exception of Captain Brabazon's.

On the 18th October the royal palaces and pleasure-gardens at Yung-mien-yuen, within the precincts of which several of the British captives had been subjected to the grossest indignities, were destroyed. This destruction, no doubt, considerably hastened the settlement of affairs, and was the most crushing of all blows that could be levelled at the Chinese inflated notions of universal supremacy.

The Summer Palace destroyed. Lord Elgin entered Peking in great state on the 24th October to sign the treaty of peace, the occasion being seized to make an impressive and "awe-inspiring" military spectacle.

On the 22nd October the siege train was sent off to Tien-tsin ; the sick and wounded were sent by cart to Tung-chou, and thence by boat to Tien-tsin.

Retirement of the force. The French army, with the exception of one battalion left for Baron Gros' protection, left Peking on the 1st November.

Before Peking, provisions were plentiful and good markets had been established. On the 7th October the 2nd Division left Peking, being followed by the 1st Division on the 8th.

An officer of the Consular service remained at Peking to prepare quarters for our Minister.

Our army had all re-embarked at Tien-tsin by the end of November. The cavalry embarked at Taku. During the march there, and the after-exposure on the gun-boats, fifteen of the horses of Probyn's Regiment perished from the effects of severe cold.

The garrison left at Tien-tsin (until the indemnity should be paid)

Garrison of Tien-tsin. consisted of the 2nd Battalion 60th Rifles, the 67th Regiment, one wing, 31st Regiment, a battery of Royal Artillery, one company of Royal Engineers, Fane's Horse, and a battalion of military train, with a due proportion of medical and commissariat staff,—Brigadier Stavelo, C.B., in command.

The force billeted in the town.

The French force, consisting of the 101st and 102nd Regiments and some artillery, occupied the left bank of the river. Two bridges of boats spanned the river; one wing of the 31st Regiment garrisoned Taku.

All the return transports were ordered to stop at Hong-Kong to refit.

Sir J. Michel visited Tien-tsin in July 1861, when it was determined that Fane's Horse, 1 battery Royal Artillery, the Military Train, and 2nd Battalion 60th Rifles, should leave China in the autumn, leaving in garrison for the winter the 31st, and 67th regiments, 1 battery Royal Artillery, and 1 company Royal Engineers.

The results of the war have fully come up to the most sanguine expectations, and since its close China has, by foreign aid, advanced in civilization, and become opened out to trade, travel, and missionary enterprise. To have refrained from the war and yet to have maintained our position at the several ports would have been impossible, and to have

Results of the campaign. given up trade with China would have been to injure the people to gratify the pride of the official classes. To have attacked any other less vital part of the Empire than Peking, would have been but to render the recurrence of hostilities certain. By attacking Peking, the Emperor himself, and not one of his viceroys, as heretofore, was menaced. The flight of the Emperor to Jehol under the pretence of taking the field at the head of his Tatar hordes, deceived none, and for ever proved to his own people the fallacy of the assumption that the Emperor of China rules the world, and that "all the world pays tribute to the Government of China."

If we would continue to remain at peace with China, the history of our relations with her bids us to bear in mind to impress upon her the inviolable nature of international compacts, the impossibility of national seclusion and the foolishness of effecting to treat other nations as barbarian peoples; these truths it may be necessary to enforce with severity, for gentleness is associated by her with weakness, and we must act always as if we held the gates of Peking with an armed force.

It may please her ambassadors to remark, as the Marquis Tsing did in September 1883, that "we sometimes hear it asserted that the Chinese strive to avoid intercourse with European nations. This is not so. We do not fear contact with foreign nations: nay, we court it, for we know the advantage of it. But we refuse to have our hand forced. We believe that commerce, &c., to be beneficial, must be a free gift, and the spear is not the Moses' rod to make it flow into the great ocean of the world's wants." When he so spoke he chose to forget history. We should be foolish did we follow his example in this matter and forget the history of foreign intercourse with China since 1880, as it would lead to our being again compelled to force the hand of his nation in the manner which he so eloquently decries. The Chinese *literati* are most able diplomatists, and their fence is aided by many advantages not possessed by their European colleagues, for at the court of Peking the rule of expediency is paramount, and the Emperor at no time scruples to disavow his agents and their actions.

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SIGNALLING IN THE NATIVE ARMY.

By Captain S. H. P. GRAVES, 26th Punjab Infantry.

FROM remarks made from time to time by writers on reforms in our army, it would appear that with many it is an established opinion that the sepoy should not be allowed to approach too near in efficiency to the European soldier—an opinion which, no doubt, is formed on the remembrance of the difficulties encountered in 1857, when we had to put down the mutiny of the trained troops of the East India Company. But considering the part that the native army has played in some of our late campaigns, and which it probably will play in future ones, it seems advisable to promote its efficiency to the utmost. No good work can be done with blunt tools.

In an article in the *Pioneer* on a Lecture recently delivered by Colonel Chapman and the discussion which followed, I noticed that the writer held that there was no reason to fear that the sepoy would ever attain to any considerable proficiency in army signalling.

Having lately returned from the acting charge of the police in the Andaman Islands, where a regular system of communication by means of visual signalling has been established, entirely worked by men of the police, I have ventured to offer an account of the work done there in order to remove the impression that native soldiers cannot be used as signallers in the field under all circumstances, and to encourage the training of sepoys in signalling in Urdu so as to make communication possible between parties of a purely native force on service.

When the Andamans and Nicobars police force was reorganized in 1880, Lieutenant Dean, 1st Punjab Cavalry, the District Superintendent, and a party of six men, went through a course of army signalling at Burki before proceeding to Port Blair. The men were thoroughly instructed in the use of the heliograph, the flag, and Begbie's lamp, and were afterwards employed as assistants in the training of other men in the force, and now a considerable number of men are capable signallers. When I left in March of last year, there were seven signalling stations established on the islands, namely, Aberdeen, the head-quarters of the Police, Ross Island, Chatham Island, Viper Island, Mount Harriet, Hope Town Jetty, and Haddo Jetty. At Aberdeen a signalling tower had been built, from which direct communication was obtained with Ross Island, Chatham Island, Viper Island, and Mount Harriet. Communication with Hope Town and Haddo Jetties was carried on through Chatham Island. There was direct communication between others of the stations I have named, but it is not necessary to detail them. Thus, in a few minutes after the discovery of any outbreak, escape, or other unusual occurrence, full particulars could be transmitted to the Chief Commissioner, the District Superintendent of Police, or other officer to whom it was required to send information, and precautionary measures taken. To work the stations properly not less than seven signallers should have been detailed to each, but it was difficult to spare so many men from other duties, especially at certain times of the year. The day signalling

was, when practicable, carried on by heliograph, and the night signalling by Begbie's lamps. As the only other means of communication between the islands was by boats, the signalling stations were much used by the officers of the settlement in their work. Such messages were usually sent in English, and though none of the signallers could understand the language, and therefore could not tell if the words had been rightly received, the signalling was so correct, both in sending and in reading, that it was rarely that an unintelligible message was sent out. But on subjects connected with their proper work the messages were sent in a simple Roman-Urdu, by means of which long and full reports were frequently received from, and orders thereon sent to, police officers in charge of outstations. In fact all messages to Native Police Officers were sent in this Roman-Urdu, and without it communication by signalling would have been impracticable. I made a small book for the use of the signalling classes, in which a description of the miscellaneous signals used in army signalling is given in this Roman-Urdu, and I append a copy of it. I found that the men had but little difficulty in using it, and easily read any message sent in it; and I think that any officer acquainted with Urdu could understand a message written in it. I have transposed as far as possible the Urdu letters into their English equivalents in sound, using the vowel "a" not "u" for the Urdu, and using the same vowels to express both the long and the short sounds. The book I have appended as an example was hurriedly written, and the proof sheets as hurriedly corrected, so many mistakes occur in it. I have no doubt a much better and clearer system of transposition could be found, but as long as one system is used and known, it matters little what its elements be. A glance at the names of the Native Officers in an Army List will show what diversity of opinion at present exists as to the way in which native names should be written in English letters.

The system of transposition having been determined on, all that remains is to make the sepoys perfect in the use of it by dictating to them sentences to be written down in it, and to use it always when practising. I found that the men attending the signalling classes in the Andamans where the practice messages were always made out in Roman-Urdu, took the greatest interest in the work, and showed great intelligence. Of course there are many men who cannot be trained, but once the English letters have been thoroughly mastered, I do not think that there will be found less aptitude among sepoys than among European soldiers.

I have no doubt that there are many regiments in which signalling is carried on in Urdu, but to those officers who may think it impossible or impracticable this short article may show that it is by no means so, and that there is no reason why in every Native Regiment there should be trained signallers able, when on detached duty, to transmit any information obtained, and in an Indian campaign in which the larger portion of the troops engaged belongs to the Native Army, and in which so much of the scouting is performed by the Native Cavalry, the advantages obtainable from the presence of such men in the force are very apparent.

MUTFARAK SIGNAL YANE NISHANION KA BAYAN.

Niche likhe hue signal yane Nishanion ko aur unke mane barzaban yad karna chahie takih signalman unko paigam ke lafzon ya group se pahchan kar uske muafik kam karen.

• • • • • P

Iske bad ek harf lagane se yih us isteshan ke pukarneki nishani hai jiska nam us harf se rakha gaya ho.

Auwal yih nishani us wakt di jati hai jab kisi isteshan ko bulana ho aur uske jawab men RT • • • • • aur woh harf diya jata hai jis se khabar bhejne wale isteshan ka nammashur ho.

Doyam yih nishani har ek paigam ke akhir men diya jata hai yane jab us paigam ke sab harf ya group bhej diye gaye hon aur uske yeh mane hain kih paigam khatm ho gaya hai aur is mauke par iske jawab men harf T • • • • • diya jata hai jo am jawab ki nishani hai.

• • • • • &c.

Is Nishani ka nam Preparative yane taya karanewali aur Erasure yane galti bhi hai.

Jab yih nishani di jawe aur uske pahle aur koi nishani nah di gayi ho to uske yih mane hain kih sab isteshan jo nazar men hon deke kar tayar ho jawen aur jis jis harf se un isteshanon ka nam mash hur apna apna harf dewen aur pahla harf P na dewen aur jab tak dusra signal shuru na ho apna apna harf barabar dete jawen.

Agar yih nishani kisi paigam ke darmian men bheji jawe to aise mauke par iske yih mane hain kih jo lafz ya group piche bheja gaya hai galt hai usko mitado aur iska jawab bhi erasure se diya jata hai.

• • • • •

Is nishani ka nam obliterator yane bilkul mita dena hai aur us mauke par istemal ki jati hai kih jab bhejne wale isteshan ne yih kahna ho kih paigam ke kul lafz ya group jo bheje gaye hain galt hain un sab ko mitado aur iske jawab men yih nishani di jati hai.

— T

Yih am jawab ki nishani hai aur iske yih mane hain kih jo lafz ya group bheja gaya hai

OCCASIONAL PAPERS.

NOTES ON CAVALRY.

TRANSLATED FROM RUSSIAN MILITARY MAGAZINE *VOENNI SBOENIK* BY
MAJOR E. R. ELLES, R.A.

At the termination of the late manoeuvres at Krasno Calo, there appeared in foreign publications accounts of the impressions produced on correspondents by the Russian troops. Amongst these accounts, that of a German correspondent attracted the special attention of the Russian press. "They are manoeuvres,—not war," says this correspondent, "but nevertheless they show us to a certain degree the situation of affairs with our powerful neighbour." The general impression, taken away by this German, was excessively favourable to us; notwithstanding all his national—if we may so express it—military self-esteem, he could not help acknowledging that the Russian artillery surpasses the German, that the Russian infantry is equally good, and that only the cavalry,—but it is this conditional approbation of the Russian cavalry that has served as a subject for the present remarks.

The experienced eye of the German officer perceived those defects in our cavalry, which, if they do not at once strike the eye, yet make themselves patent in the course of manoeuvres lasting over some days, and give a specialist the right to take them into account.

In our cavalry the correspondent remarked the following points: Little mobility, slowness in action, indecision, in a word incapability of playing its chief rôle, which consists in threatening the enemy by rapid attacks, and by these means covering your own movements.

We do not attach unconditional importance to the words of a newspaper correspondent; nevertheless the question of the efficiency of our cavalry, compared with that of foreign nations, is one so dear to the heart of every Russian officer, that its decision is of the highest degree of interest—all the more so, that in the event of a European war, excessively difficult and serious work would fall to the lot of the cavalry. The horse we get for the ranks is incontestably a good one, and our cavalry soldier, although a short-service man, above reproach, and yet notwithstanding that these two elements, forming the very existence and basis of the whole, are excellent, yet there springs up in the mind of a foreign specialist (and perhaps not of one only) a doubt as to the efficiency of the valiant Russian cavalry which has, at all times, covered itself with unfading glory.

How is this then? Where are we to seek for the cause of this doubt?

As has been said above, the two component parts of our cavalry have been, and are at the present time, above reproach. The horse trained and mobile; the rider daring, quick, a clever swordsman; and in addition capable of bearing privations, which the soldier of other nations is unable to do.

But this is not sufficient. Out of much that it is necessary to supplement this excellent material, we will point out three by no means unimportant things, *viz.*, proper training, arms corresponding to the requirements of war and experienced cavalry leaders, cavalrymen not by uniform only, but in heart capable of commanding masses of cavalry, and of extracting from them the enormous advantage these masses should give in spite of

the most rapid firing arms of infantry and artillery. Lately no little attention have been given to the training of cavalry. They are endeavouring to forget what was considered not so long ago as forming almost the only standard of capacity of a cavalry leader, to command a unit, *viz.*, that he should have a horse of enormous frame. Endeavours are being made to induce officers to introduce suitable horses instead of the former parade screws; they are commencing to practise long cavalry marches, but all this is still far from being brought to a system, as it is amongst our neighbours, but differs entirely in divisions, and even in regiments according to the individual views and tastes of commanders of units.

In one regiment the officers provide themselves with half-bred or thoroughbred horses; in another they still keep up old screws; in one division whole regiments swim across rivers, in another they never think of anything of the sort; here we see experimental marches of units several hundred versts in the shortest possible time; on the other hand other units never have any march except from their winter quarters to the camp of exercise. In a word the diversity of practice is complete, and to be deprecated.

With reference to the arming, we must remark that lately there has been a considerable change in consequence of cavalry being furnished with a rapidly firing weapon. That this weapon gives cavalry considerable independence, renders them capable of carrying out distant expeditions in large masses, that it opens the way for cavalry into localities where formerly a handful of riflemen could bar the way—of all this there can be no doubt. But it is also incontestable that it overburdens the cavalryman, and consequently diminishes his rapidity of movement, and chief of all that it produces on the cavalryman a physical effect, which it is necessary to fight against unwearingly in time of peace. Every one knows how difficult cavalry operations are, not only in war, but in peace manœuvres; such operations require the faculty of grasping your surroundings, of selecting the proper moments, of taking advantage of locality for concealing your advance on the enemy, of unswerving decision in carrying out the attack and its rapid completion; the operations of the slowly moving infantry units are incomparably easier, as they only require a slowly moving medium (fire), and they only, in exceptional cases, attack with the bayonet. Under these conditions if you leave cavalry to themselves and leave them without the power to operate acquired by proper training, the logical result under the conditions given is that there is a gravitation towards operating as an infantry line to the destruction of rapidity and shock. In our cavalry a bold cavalry spirit still exists, but notwithstanding this in manœuvres a tendency towards fighting on foot shows itself. This constant effect must be attributed to the carbine, and it must be incessantly fought against, as it will invariably show itself in time of war. We will give an example:—A chain of scouts is sent out under an officer; the chain is extended, and the links are almost entirely left to themselves; the officer with the very best intentions cannot possibly be everywhere at once. In spite of all orders the scouts, seeing the enemy not so far off, and having rifles across their shoulders, open fire. A more or less successful "picking off" of the enemies' scouts commences, which naturally takes up the time and attention of the chain, and directly defeats the chief object of the reconnoitring line which is to push forward as far as possible, obtain intelligence and give rapid information of the strength of the enemy, the character of the locality for the proposed attack, &c. As a result a few of the enemy's men are killed to no purpose, but at the same time the movement of the cavalry scouts—those most important feelers which first and foremost of all come into contact with the enemy—is stopped. These and similar operations,

such, for instance, as a wish to act on the defensive on foot instead of endeavouring to attack the enemy mounted, must be unwearingly censured and can only be counteracted by regular training carried out in a purely cavalry spirit.

Cavalry ought to be able to pass through any localities, and not only seek out open and level plains—which in the present state of cultivation are becoming fewer and fewer—they must know how to attack the enemy in any situation in spite of his fire; on occasions they must dismount, but only in order to mount again, and, in mounted formation, to threaten the enemy. Finally, cavalry must remember that the carbine is entirely a secondary means of offence, and that all their power lies in the rapidity and force of the blow delivered.

At the same time we may remark that in latter times the difficulty of cavalry attack under the armament of the present day has been constantly pointed out, and that this difficulty has, in the eyes of superficial observers, been easily perverted into “impossibility” to attack which removes cavalry, as it were, from the battle field, and gives it another (strategical) sphere of action. But military authorities, and amongst them Skobeloff, have always maintained that cavalry attacks at the present time should not be done away with, and that the difficulty surrounding operations only points to the double necessity of carefully preparing for the attack.

Third and most important point in cavalry is to have bold and experienced leaders. Without having any right to throw doubt on the brilliant qualifications of the present cavalry staff, we may, nevertheless, remark that in the campaign of 1877-78 where, so to speak, we never had in front of us a serious cavalry antagonist, our cavalry did not always fulfil the tasks entrusted to it.

In the present manoeuvres something of what we have here expressed must have been brought out in pretty strong relief, and given the foreign specialist cause to make some remarks on our cavalry. In conclusion we may quote the words of an old fighting major of a Prussian Uhlan Regiment, who not long ago conversed with us on the importance of cavalry generally. *Russland braucht nur Kurassierin, denn Kasaken hat sie schon* (Russia only requires Cuirassiers, for she has got Cossacks already). It is impossible to agree with these words in their literal sense, but if by Cuirassiers we understand the kind of cavalry who are the impersonification of shock and attack, we cannot but wish that these elements played a dominating part amongst our cavalry.

VL. OREUSS.

PESHAWUR, 23rd January 1885.

THE MUSKETRY INSTRUCTION OF THE RUSSIAN INFANTRY.

TRANSLATED FROM THE GERMAN BY SERGEANT J. J. KÖNIGS, 8TH
QUEEN'S LANCERS, ATTACHED, INTELLIGENCE BRANCH, QUARTER-
MASTER GENERAL'S DEPARTMENT IN INDIA.

THE instruction of the Russian infantry, the most important branch of the service, is based on the Regulations of 1882, which were compiled by a special committee, over which the Inspector-General of Musketry, General Notbek, presided. The regulations are very much the same as those of 1881, and only differ in regard to the programme of the "target practice." According to the Russian musketry instruction the result of fire in action can only be effective by observing the following principles :—

1. That the men should have a thorough knowledge of the peculiarities of their weapon, in which is comprehended the production of good shooting, and a correct estimation of distance.

2. That the fire should be skilfully directed according to the different stages of the battle; and the various objects which present themselves.

The company commanders undertake the superintendence of the "preliminary instruction" as well as the "actual instruction," and are assisted by their subalterns. The battalion and regimental commanders examine the officers annually in musketry, and give them every facility for acquiring such skill in shooting as will enable them to appreciate the good shooting powers of a rifle.

Before the soldier commences his annual course he must be proficient in loading, in taking to pieces and putting together the action of his rifle, and must have some knowledge of its peculiarities.

He must further have learned :—

- 1st.—To take aim correctly.

- 2nd.—To go through the position drill.

- 3rd.—To take a correct aim without a rest.

- 4th.—The method of firing.

- 5th.—To understand the effect of the powder, the course of the bullet, and all the different forces which influence its accuracy.

- 6th.—He must be able to judge distance correctly.

- 7th.—And last, to adjust the back sight at the different ranges.

To assist the instruction in musketry, tripods, aiming targets $\frac{1}{16}$ of the actual size, and snap caps or dummy cartridges are provided. The snap cap is so constructed that when the needle of the rifle is released it strikes on the spring of the snap cap, and lessens the jar on the several parts of the action, which saves wear and tear.

It is noticeable that all drills are gone through with fixed bayonets.

The practices are very nearly the same as those of the German infantry.

As soon as the man has learnt the principles of shooting, he begins practice with a saloon or chamber rifle, loaded with a small bullet with which he has to fire 100 rounds yearly, the same amount of ammunition which is allowed in the French army to every man who is armed with a Gras rifle, pattern 1874.

The soldier is practised with the saloon or chamber rifle in marching order and with fixed bayonet. Until he has become sufficiently proficient to be able to fire a shot with good effect in 5 seconds, he is not allowed to commence practice with blank ammunition, when he is also taught the use and purpose of the back sight when not raised, which gives a point blank* range of 800 paces.

The actual target practice is divided into "preliminary practice," target practice and field firing.

Besides these practices there are theoretical instructions carried out during the winter months, and firing at 100 paces, which last has to be executed by the recruits, as well as by the casuals in the annual course.

The practice targets are alike for all branches of the service.

Target No. 1 is 1·86m.† or 6·10 feet high and 1·88m. or 8·74 feet broad; this target is divided horizontally into three equal parts, the two outside parts are painted light grey, and the middle part remains white, a black line 18cm.‡ or 5·12 inch in breadth runs perpendicularly down the middle of this, and widening out into a circle in the centre. On this target one or three entire figures, half figures or head figures can be pasted.

Target No. 2 is 2·6m. or 7·77 feet broad and 1·7m. or 5·57 feet high and painted light grey, and is divided across into six parts, the distance between each part is 44cm. or 11·15 inch. This target is used for the "annual course" and field firing at long ranges.

To give an object to aim at a black line is drawn across the centre, which represents the height of a half figure, below that line is another black line which represents the head figure.

According to the object required the entire half and head figure targets are used.

When firing for prizes both officers and men use targets with fourteen circles.

Recruits fire two practices of four rounds each, standing at 100 paces without a rest and without conditions as to hits.

In the preliminary target practice each man expends 24 rounds of ammunition, as the following table will show:—

No. of practices.	Distances in paces.	No. of rounds.	Position.	Elevation.	Target.	Condition showing the number of hits which have to be made.
1	200	4	Standing without rest	According to distances.	No. 1 ...	3 hits in the white part (breadth of a man).
2	200	4	Ditto ...		Ditto ...	Ditto ditto.
3	300	4	Ditto ...		Ditto ...	2 hits in the white part.
4	300	4	Ditto ...		Ditto ...	Ditto ditto.

* "Kerachuss."—Point blank range is, I am aware, not a scientific expression, but it expresses concisely to the unscientific the author's meaning, viz., the limit of the first grade when using the lowest back sight.—*Translator*.

† 1 metre = 1·0936 yards, English.

‡ 1 centimetre = 0·393 inches, English.

After these four practices follow the theoretical principles which are divided into three parts, *i.e.*, illustration of the trajectory, the culminating point of the trajectory up to 500 paces and indirect fire; the latter is only begun before the commencement of "field firing."

In consequence of the small calibre of the Berdan rifle No. 2, indirect fire is only employed at distances over 1,000 paces, and is only useful at these long ranges, since at the shorter distances, in consequence of the flatness of the trajectory, the bullets would not strike an enemy under cover.

If targets are placed behind a parapet 2.1m. or 6 feet high, they are arranged in four rows, each of which has six No. 2 targets, and are so placed that the first row is twelve paces behind the parapet, and the other rows fifteen paces behind each other, so that the whole depth of the object amounts to 45 paces.

If targets are placed behind undulating ground the number of rows depends on the nature of the ground, the depth of the column should be at least 80 paces. To assist aiming, flags are placed on the crest of the parapet on each flank of the targets.

On account of the great adaptability of this method of firing (indirect) in action, preparations have to be made with the greatest care, so that the result obtained may correspond with the expenditure of ammunition, and those present may be convinced of the utility of indirect fire at certain stages of a battle.

If targets are placed behind a parapet the fire is first directed on the crest line. After finding the correct elevation the firing is stopped, the hits pasted over, and the back sight raised 25 to 50 paces, then the firing is commenced again either by volleys or by firing a certain number of rounds (three to six) in standing, kneeling, or lying down position, with or without rest. If the targets are placed behind a natural cover, then the result of the sighting shots are signalled. The indirect firing of a company is witnessed by all the officers, non-commissioned officers and soldiers of the battalion.

After the first two "theoretical practices" all soldiers including those who have not fulfilled the prescribed conditions in the "preliminary practice" with 24 rounds, commence the "annual target practice," which is divided into 11 practices with four rounds to each practice; these are fired without any conditions as to number of hits.

TABLE II.

No. of practices.	Distances in paces.	Position.	Elevation.	Targets.	Place aimed at.
1	200	Standing without a rest.	Point blank.	1 figure on target No. 1.	At the feet.
2	300	Do.	Do.	Do.	At the knees.
3	300	Do.	Do.	1 figure.	Do.
4	400	Lying down without a rest.	According to distances.	Two 1 figures on target No. 1.	Below the breast.
5	600	Do.		Three 1 figures on target No. 1.	At the knees.
6	600	Do.		Do.	Do.
7	700	Do.		Six 1 figures on target No. 1.	Do.
8	800	2 shots kneeling 2 " lying down without a rest.		Do.	Do.
9	200	Rapid firing lying down without a rest, time for each shot five seconds.	Point blank.	1 figures on target No. 1.	Below the figure.
10	200	Lying down without a rest.	Do.	Head figures on target No. 1.	One head below.
11	300	Standing without a rest.	Do.	1 figure.	At the knees.

It is noticeable that the entire "annual target practice" is fired at figure targets, which arrangement appears most serviceable. Apparently the kneeling as well as lying down prone position, which is most useful at long ranges, is somewhat out of favor in Russia, as it is shown in Table II that the man out of the 44 rounds of the "annual target practice" only fires two in three kinds of position, which are the best adapted for fighting. The numerous practices in the standing position without a rest are, in our opinion, out of date as regards present fighting.

All men of infantry, recruits excepted, have to go through two "winter courses of firing." This practice is performed individually at figure targets, with three rounds at each practice. The purpose of this is to show what effect the cold has on the rifle and ammunition; still the weather must be favorable for firing, and the temperature not lower than 5° Reaumur.*

For the four exercises of the "preliminary practice," 16 rounds are fired. Soldiers who fail to qualify with this number of rounds are given eight more.

This gives 24 rounds for the "preliminary practice," but out of these have to be supplied the eight rounds fired by the recruit at 100 paces.

Forty-four rounds are fired in the 11 practices of the "annual target practice," viz., for individual firing six, section field firing 32, and

* 23 Fahrenheit.—(Translator).

for volley firing six rounds. According to this the soldier thus receives 112 rounds for the entire course, a number which is exceeded by the French and Germans with 120 and 130 respectively.

Besides the abovementioned 112 rounds the company commander has 18 more rounds per man to dispose of for "instructional practice," testing of rifles, for the winter course, examination, inspections and prize firing—an exceedingly varied distribution of such a limited number of rounds.

According to the Russian system of musketry instruction the men are divided into three classes. The first class consists of men who have completed the exercises of the "preliminary practice" with 24 or less rounds and have with the 44 rounds of the "annual target practice" made 33 or more hits.

To the first class also belong those men who have not entirely completed the exercise of the "preliminary practice" with the 24 rounds, but have in the annual target practice made 35 or more hits with the 44 rounds.

To the second class belong the men who have completed the exercises of the "preliminary practice" with 24 rounds, and have only made 22 to 32 hits in the "annual target practice;" and also those men who have not completed the exercises of the "preliminary practice," but have made 26 to 34 hits in the "annual target practice."

The third class consists of all those men who have not completed any of the above practices.

Those men who qualify for the first class in two successive "annual courses" receive the title of "excellent riflemen" (marksmen). These men have not to go through the successive classes again.

The Russian musketry regulations have this advantage, that each man completes his course, whether he has completed the firing of each practice or not. On the other hand this regulation appears to effect prejudicially the soldier's fundamental instruction and keenness for shooting.

Soldiers, who under ordinary circumstances are called in, as well as those sections which are mobilized immediately before the advance to the seat of war, have to go through a short course of musketry. This course consists of seven practices, each practice of four rounds at the following ranges, *viz.*, 100, 200, 300 and 600 paces, besides a practice in volley firing at 300 to 400 paces. The total number of rounds for the short course is 32, which is fired entirely at figure targets.

The field firing is divided into individual firing, volley firing and section firing. The individual firing consists of two exercises, which have to be performed by all subalterns and soldiers during the practice.

(1.) Firing at 200 paces at a head figure target, or at 400 to 500 paces at a half figure target.

(2.) Firing at 500 to 600 paces at a No 1 target with three figures, or at 700 to 900 paces at a target with six figures.

Each man uses six rounds for these practices. It appears to us that the distances fixed are too great, in comparison with the size of the target, to permit of men deriving real advantage from these practices with so few shots.

The volley firing is practised at 300 to 400 paces at a No. 1 target with three entire figures, and at 700 to 900 paces at a No. 2 target with 12 figures, which are placed beside each other.

At each of the above ranges three half company volleys are fired.

The section field firing consists of four practices, each of two or three exercises at each practice at which eight rounds per man are fired. Two practices are performed by each company of peace establishment, the other practices by companies of war establishment; a company of peace establishment represents half a company of war strength.

For field firing the Russian regulation adopts the following principles:

It has been proved by experience that the individual fire is the most effective under the following circumstances:—

- A. Up to 200 paces (210m.) against men lying down or half covered.
- B. Up to 400 paces (280m.) against men uncovered or half covered.
- C. Up to 500 paces (350m.) against an object of half the height of a man, but of greater breadth than one.
- D. Up to 800 paces (560m.) against an object of the full height of a man, but of greater breadth.

A good shot can hit even at a range of 900 paces if he judges the distance and elevation accurately.

The German regulation fixes as the maximum distance for aiming, A 200 metres, B 250 metres, C 350 metres and D 400 to 500 metres. We see, therefore, that for all objects except C the Russian instruction names greater ranges.

Up to the abovementioned fixed distance the volley firing is used, the effect of which depends on the depth and extent of front, accurate judging of distance and steadiness of firing.

The aim of fire discipline in battle is the destruction of the object of the greatest tactical importance, with the smallest expenditure of ammunition, in the shortest time; for this is required, a complete knowledge of the rifle and of the causes which prevent good shooting, a correct appreciation of ground and distance, and further a proportionate distribution of fire and therefore proper placing of the section for the purpose.

The Russian musketry regulations describe various kinds of firing as follows:—

Individual firing which is employed under circumstances and at ranges, where the control of other kinds of firing would be impracticable.

Volley firing which can be either performed by volley of groups, divisions, half companies and companies, or individual firing with a fixed number of rounds.

Infantry fires up to 400 paces (280m.), cavalry up to 500 paces (350m.) with point blank sighting, i.e., 300 paces (210m.) Against moving objects at longer ranges two kinds of elevation with a difference between them of 100 paces (70m.) should always be used. The front rank therefore adjusts the back sight according to command, whilst the rear rank, without any further command, adjusts the back sight to 100 paces (70m.) lower elevation.

The regulation for the tactical instruction of the Russian infantry orders that the commander gives the word for two different elevations, *i.e.*, front rank *X*, rear rank *Y*, paces ; but since the new edition of the musketry instruction is of later date than this regulation, it would appear that this order has since been changed.

Up to 900 paces (680m.) any object may be fired at, but beyond that range the fire should only be directed against such objects as have a sufficient breadth and depth to enable the fire to be effective.

The following rules are fixed by the Russian musketry regulations for conducting field firing in action :—

I. Individual field firing—

At 200 paces (140m.) : the object aimed at consists of four rows each with four head targets.

At 4 to 500 paces (280 to 35m.) : the object aimed at consists of four rows each with half figures.

At 5 to 700 (350 to 490m.) paces : the object aimed at consists of four targets No. 1 each with three figures.

Each firing section consists of four men ; behind each man stands an officer or non-commissioned officer. The men have to run into the firing line and halt at a signal from the instructor. The object of this practice is to explain to each man the target at which he has to fire. Then at a signal from the instructor the men take up their position, adjust the back sight, load and fire five successive shots, which must have been fired by the time the instructor gives the second signal two minutes afterwards at the least.

II. Section field firing—

Each exercise of the above practice should have some tactical object in view, which should be divided into several exercises, and should consist of :—

A. Firing at large columns at long ranges.

B. " " deploying troops.

C. " " kneeling and lying down skirmishers.

D. " " an object which represents a squadron.

E. " " " which represent artillery.

If a covered object is fired at, the flanks of the object aimed at must be marked by flags. The instructor points out the object which is to be fired at (the remaining targets being considered out of sight), and then gives the command to commence firing ; the leader of the division looks at the object aimed at first and then commences firing, which has to cease at a given signal from the instructor. This must be allowed to be a very good regulation, which gives for firing at objects at long ranges two to three minutes, firing at small skirmish lines thirty seconds and at attacking cavalry one minute.

The percentage of hits (figure of merit) cannot be given here, since the conditions of carrying out the practices differ so much from each other.

The Russian regulation recommends that the practice of field firing should be carried out with blank ammunition, and if this exercise is properly conducted it would be very useful.

The instruction of musketry includes some directions regarding judging distances which are divided into preliminary drill and practice ; in the preliminary drill the men are taught how troops and other objects appear at different distances, and what influence light, background, and the nature of the ground itself has on the sight.

Officers have to learn to judge and measure distances with the assistance of an instrument (range finder) up to 3,000 paces, non-commissioned officers have to judge distances up to 1,500 paces, and men up to 900 paces.

The results are considered satisfactory if in judging distances between 200 and 1,500 paces the mistakes in judging do not exceed $\frac{1}{10}$ th of the correct distance.

In the Russian, as in other musketry regulations, we find several rules regarding prizes for good shooting.

Marksmen are those who fired twice in the first class, and completed all its practices.

They wear the "good shooting badge." The prizes are distributed after the competitive shooting in which only the ten best of the first class take part.

It appears to us unsatisfactory that the men of the second and third classes cannot obtain prizes.

The inspection firing is performed as follows :—

- (1). Four half companies at 200 or 300 paces, time unlimited.
- (2). Two half companies at a distance between 500 and 800 paces.
- (3). Two half companies at 400 paces at a half figure, or at 200 paces at a head figure target.
- (4). Two half companies "rapid firing" of five seconds at 200 paces at a half figure.
- (5). Two half companies "volley firing," time unlimited, at a distance between 300 and 800 paces.

For these practices four rounds per man are allowed.

As an illustration of the manner in which section inspection firings is performed in Russia, the following account of the exercise of this nature performed by a company of the 19th Rifle Battalion, under the direction of General Todleben, may be interesting :—

(1). *General idea.*—The company meets an enemy's skirmish line with a reserve in support, strength 1 company. In carrying this out, finding the distance took four minutes and the firing $1\frac{1}{2}$ minutes two half divisions fired two rounds per man with fixed sight, that is, 300 paces (the actual distance being 350 paces), the other six fired six volleys at the enemy's reserve with an elevation of 800 paces (the actual distance being 848 paces), the result of this firing was 18 hits in the skirmish line and 98 hits in the reserve.

(2). The company received the order to fire at an enemy's column, which was covered by the outworks of a fortress ; the firing was to last two minutes. Behind the parapet stood 24 No. 2 targets in four rows. The company delivered one volley by half company and four company volleys by indirect firing, with an elevation of 1,175 and 1,275 paces, the actual distance being 1,200 paces ; the result was 126 hits.

(9). The company was suddenly attacked from the left by a squadron (represented by three targets, No. 1, at different distances). Time for development of the attack, one minute.

The company fired with fixed sights, three volleys in one minute. The distances were 450, 300 and 180 paces, the result was, in the furthest row 35, in the centre 54, and in the nearest 41 hits

In these three trials 778 rounds of ammunition were expended, with the result of 372 hits, equal to a percentage of 46 hits.

The pains taken in the Russian musketry regulations to impart a practical tactical instruction in this important branch of warfare cannot be denied.

Their regulations for musketry instruction resemble, in many points, those of the Germans, while the regulation for indirect infantry fire appears to be derived from that of the French. The great value of the preliminary practice, as well as the use of the saloon or chamber rifle, is perfectly recognised in the Russian instruction. A new feature of the last only lately introduced is the firing of a certain number of rounds in a given time.

In the Russian army a great fancy is displayed for volley and indirect firing; the latter is very effective when the enemy's position is marked with flags, and the men are perfectly acquainted with the distance, the height of the trajectory and the elevation of the cover, but these conditions would not, in general, be fulfilled in a campaign, and therefore it would be better to give up these methods of firing which could only be used with advantage in a siege.

MANUAL FOR ARMY COOKS.

THE Secretary of War, United States Army, has caused to be published a manual bearing the above title. It has been drawn up by a Board of Officers consisting of an Army Surgeon, a Commissariat Officer, and a Combatant Officer. The Board experimented on the army rations as well as on "such articles as are likely to be purchased and used by hospitals and companies," and the result of their deliberations has been this manual, which comprises over 250 recipes. The Board also drew up several model diet tables, one of which is appended as an example. From this it will be seen how varied and appetizing the soldier's diet has been made. Soup, it appears, enters largely into the American soldier's *menu*, and there is no reason why it should not take a like place in the British soldier's "bill-of-fare." Pea soup and good thick vegetable soup are both nourishing and popular dishes, and if the soldier had more control over his rations, and was provided with such a manual as this, there can be little doubt that he would be better fed and better satisfied.

Of course, with native cook boys there would be some difficulty, but the orderlies would soon overcome this if they themselves knew anything about cooking; unfortunately the British soldier has no ideas on the subject, and the only thing is to teach him.

There is one simple way of doing this. Every regiment on its first arrival in India is, as a rule, quartered in the hills. Don't give them cook-boys, but insist on troops in the hills cooking their own food; then with such a manual as this, and control over the purchase of their vegetable rations, they will soon learn to cook a good dinner for themselves, and to introduce some variety in their daily food.

E. G. B.

DIET TABLE NO. 3.

	Breakfast.	Dinner.	Supper.
SUNDAY ...	Sirup, butter. Hash. White bread. Coffee.	Bean soup. Corned beef and cabbage. Mashed potatoes. Bread and rice pudding.	Stewed apples. Tea. Bread. Cheese.
MONDAY ...	Boiled hominy and bacon. Coffee. Bread. Butter.	Vegetable soup. Roast beef. Mashed potatoes and vegetables. Bread and pickles.	Tea. Bread and sirup. Cheese.
TUESDAY ...	Baked hash, with onion gravy. Coffee. Bread.	Vegetable soup. Baked beans and bacon. Mashed potatoes, bread. Boiled mush with sirup.	Stewed dried fruit. Tea. Bread.
WEDNESDAY ...	Bacon. Coffee. Bread. Sirup, butter.	Roast beef, with onion gravy. Mashed potatoes and vegetables. Pickles. Bread pudding.	Cheese. Tea. Bread. Butter.
THURSDAY ...	Baked hash, with gravy. Coffee. Bread. Butter.	Boiled beef. Mashed potatoes. Vegetables. Bread.	Stewed dried fruit. Tea. Bread.
FRIDAY ...	Fish. Potatoes. White bread and cakes. Butter, sirup.	Roast beef, with gravy. Fish with sauce. Mashed potatoes, vegetables. Bread and boiled mash with sirup.	Cheese. Tea. Bread. Butter.
SATURDAY ...	Hominy and bacon. Coffee. Bread. Sirup.	Irish stew. Baked beans. Vegetables, pickles. Bread.	Stewed dried fruit. Tea. Bread. Butter.

EXTRACTS.

Military Aeronautics.

Those who look upon military ballooning as something more than a purely experimental science will be interested in, though perhaps not greatly encouraged by, the following extract from a very recently published work, "France and Tongking," a Narrative of the Campaign of 1884, and the occupation of Further India, by J. G. Scott (Fisher Unwin), 1885.

Perhaps the greatest novelty of the campaign in Tongking was the balloon service. It cannot, however, be said to have been a great success, and perhaps hardly justified the expense. A good deal of this was no doubt due to the utter collapse of the latter part of the campaign. The Chinamen ran away so fast and so persistently that even the officer in the balloon was unable to see more of them than less elevated people on the mud down below. Some enthusiasts went so far as to say that this cowardly characteristic of the celestial legs was due to the mere presence of the balloons. The Chinamen thought that it was "Joss pidgin," and perhaps imagined that death was going to be poured down on their heads from the very skies. Certain it is that the only place where the balloons were really used was at the bombardment of the Trung-sou forts, and there the engineer officer had not above five minutes' work. He simply pointed out, or rather called down—for it was extraordinary how distinctly his voice was heard from a height of at least a thousand feet—where the forces of the enemy were, and where they had works. The artillery directed their guns accordingly, and the Chinamen jumped off their ramparts and ran away.

Perhaps the most interesting result obtained was the knowledge of how long the balloons could be carried without the manufacture of new gas, and the consequent necessity of taking or leaving an immense amount of cumbrous impediments. The method adopted was to convey one balloon for purposes of observation, and another smaller one to act as a reservoir to fill the working balloon when necessary. On this system it was found that one supply of gas was quite sufficient for twelve days, and on the thirteenth the balloon could have been used for observations if it had been necessary.

On the other hand, it is undeniable that they gave a great deal of trouble, and on some occasions degenerated into a pure and simple nuisance. The larger balloon was carried about two-thirds inflated, and from twelve to fifteen men were necessary to drag it along. The least wind necessitated the adding of extra men, for it swayed about in a very dangerous way. Then, whenever the path was narrow and there were trees about, the aerostats had to make long detours, for if a rope had caught in one of the trees, the balloon might have swung down and ripped the silk. This was especially troublesome on roads where there were many villages, and frequently seriously delayed the columns. In Europe, where there are broad turnpikes, this trouble would no doubt not exist; but in Europe light cavalry scouts would probably be far more useful, and possibly more expeditious, in giving news of an enemy's movements than a balloon, even if it were fitted with a field-wire, which would necessitate greater elevating power. Altogether, the Tongking balloon experiment does not seem to have advanced the science of military ballooning to any appreciable extent.

Veterinary and Army Transport.

The desirability of placing the veterinary arrangements of the Transport Department upon a more scientific footing is ably discussed in the current

number of the *Quarterly Journal of Veterinary Science in India*, from the "Editorial" of which the following is an extract :—

When war breaks out a *veterinary surgeon*, who may be fresh out from home, where he has seen elephants and camels only in the Zoological Gardens, and has had no opportunities of becoming specially acquainted with the peculiarities of Indian oxen and mules, suddenly finds himself in charge of a miscellaneous assortment of animals numbering a few thousands, most of them fully eligible for a place on the sick list, such an officer, with limited special experience, can, work as hard as he may, exert but little influence for good. After years of service in India, many marches done, and a few actual or mimic campaigns, even under the present system an observant and careful *veterinary surgeon* is rendered competent by theory and practice to perform transport *veterinary duties*; but if Government were to tell off officers for this special branch of work, whereby they might collect records of disease, acquire sound methods of organization and treatment, and publish works on special pathology for information of the future members of the department, then in war time specially skilled and experienced officers would be available for transport, and could be trusted to reduce the prevalence of disease and inefficiency during active service to a minimum. In these days of camel corps and camel transport our deficiency in knowledge of the diseases of the "Ship of the Desert" ought to be as unsatisfactory to Government, who will not afford opportunities for study, as it is to *veterinary surgeons*, who cannot obtain sufficient facilities in this line. At present a *veterinary surgeon*, perhaps already seriously overworked by a large charge of Government horses, may be called, without extra remuneration, to advise in casting, selection, outbreaks of disease, serious injuries, and other routine duties and emergencies such as occur in the transport. He can render valuable services under these circumstances, being more competent probably than the other members of the responsible Board through his knowledge of the general principles of disease and animal management, but how much better and more satisfactory it would be were he able to give his opinion as that of an expert in the matter under consideration, and be available for reference on all occasions instead of as now, the transport officer being diffident in applying for gratuitous advice to a man whom he knows to be fully engaged at other duties? *Veterinary organization of the transport* would, in addition to its economy in the saving of animal life, lessen the expenditure in medicines and appliances which now takes place in a haphazard manner. In all transport matters cheapness has to be studied, in so far as it is compatible with efficiency—it is to be feared that in many stations expensive instruments and drugs are lying useless and deteriorating for want of care in keeping, and of opportunities for their use, it is certain that the utilization of bazaar medicines has not yet been developed in its full efficiency, and that many of the salootis now employed on high salaries are useless and unfit for their positions. Much might be done by the calling in of all superfluous instruments, the introduction of simple patterns for transport use, the regulation of supplies of medicines and appliances, the supervision of expenditure of drugs, the development of bazaar medicine supplies for transport use, and the education of sick line subordinates in the elementary duties of their business. The organization of *veterinary system for field service*, the arrangement of field service chests, the adoption of a system of *veterinary records for transport*, and collection of statistics of disease and lameness are matters which urgently demand careful consideration, and which might safely be entrusted to *veterinary surgeons* in charge of transport. Few matters are more needed in the transport service than *veterinary statistics* which would inform Government of the annual

loss of services of transport animals from various causes, with a view to correction of defects in the future. The single injury "Sore Back" would then assume an importance very different from that derived from individual cases of it. Glanders and some other communicable diseases would have their centres of spread determined.

Camp Sanitation.

In the current number of the *Journal of the Military Service Institution of the United States* appears a striking article from the pen of General Egbert L. Viele on "Camp and Garrison Sanitation." Although the author does not actually quote that well-worn parody of a Scriptural homily, "*Sanitas sanitatum, omnia sanitas*," he freely translates it when he lays down the axiom that the question of sanitation is the most important element in the administration of military affairs. And he goes on to illustrate this by a series of examples backed up by statistics which are full of conviction. The following, for instance, shows plainly the disproportion that has existed between the number of soldiers killed in battle and the number who die of disease.

Great Britain has had a terrible military experience, and furnishes in her history the most striking illustrations of a want of proper sanitation among her troops. The wars waged by that power have been, in a large measure, different from those conducted by other nations. They have been, as a rule, wars of aggression and conquest. Hence those contests have generally lacked the great element of patriotism that has characterized the wars of most nations, and which illuminate instead of darken the pages of their history. The effect of this is seen in the appalling death-rate that marks the track of British troops. Mercenaries that are bought and paid for like cattle lack all noble and inspiring motives, and lack as a consequence moral courage and physical stamina, strikingly exhibited by the Hessians sent to America during the war of the Revolution. Twenty-nine thousand German soldiers were purchased for \$25,000,000 and shipped to this country. Of these nearly one-half perished of disease, whilst comparatively few were actually killed in battle.

Since the beginning of this century 180,000 British soldiers have perished by disease alone in India, and as each soldier costs that Government 500 dollars to land him in that country, the loss in money alone has been 90,000,000 dollars. In the forty-one months of the Spanish war, 24,930 British soldiers died of disease, while but 8,999 were killed or died of wounds. In the first seven months of the Crimean war the mortality among the English troops was sixty per cent. per annum from disease alone—a rate of mortality exceeding that of the great plague in London, and a higher ratio than that of the mortality in cholera to the attacks, that is to say, there died out of the army in the Crimea an annual rate greater than ordinarily die in time of pestilence out of the sick. Of the 533,000 soldiers that formed the French invasion of Russia, only 45,000 returned in regular bodies. The army lost 129,000 men, without a single encounter of any importance, six weeks after crossing the Niemen. When the grand army reached Moscow it had dwindled to 95,000 men; thus, before the beginning of the cold, losing two-thirds of its number. In the campaign of 1828 against the Turks, the Russians appeared on the Pruth with 80,000 men, who were reinforced the next year by 40,000 more. When the main body reached Adrianople, it scarcely numbered 15,000 capable of fighting. Of the 115,000 Russians who invaded European Turkey in 1828-29, scarcely more than 15,000 returned across the Pruth. Jomini calculates that the Russian army, in these two campaigns, lost 115,000 men, of whom 100,000 died of disease alone.

In the war between the United States and Mexico, there were killed in battle or died of wounds, 120 officers and 1,429 soldiers; died of disease, 101 officers and 10,885 soldiers; to which if we add 9,749 discharged for disability, it would make an invalid loss of 20,634 out of the aggregate of 100,454 men engaged in the war. It is also true that there were but few survivors of that war who were not more or less affected with disease incident to the climate and the privations endured. During the Civil War the Union Army lost 304,369 men, of which 93,969 were killed in battle or died of wounds, leaving 210,400 who died of disease, from June 1861 to June 1866, a period of five years, out of a total average mean strength of 431,237 (the highest was 619,703 and the lowest 41,506); there were 5,825,480 cases of sickness treated, of which 393,773 were wounds or accidents, leaving 5,431,507 cases of disease alone. How many of these 210,400 deaths, and these 5,431,507 cases of sickness were due to causes that are embraced under the head of preventible, it is the province of sanitary inquiry to determine.

Pigeon Communication during the Easter Manœuvres.

In connection with the Easter operations of the Volunteers, experiments were made with messenger pigeons, the object being to show the value of these birds in warfare, as a means of conveying messages long distances when telegraphic and other means of communication have been cut off or interrupted.

For the purpose of the experiments the invading forces near Brighton and Dover were supposed to be connected. The invaders having landed at Pegwell Bay, and being in possession of Deal and Walmer, have captured a loft of pigeons trained to fly to the latter place from any part of England. These birds having been sent by sea to Newhaven, have been landed with another corps of the enemy advancing on Brighton, and by this means the enemy's forces are able to communicate with each other.

The English forces near Brighton communicated with their comrades at Dover under the following "general idea:" The officer commanding at the latter station, learning that an enemy had landed on the South Coast, and was likely to interrupt telegraphic communication with Dover, sent some trained messenger pigeons by train to London. These birds accompanied the march of the British forces advancing against the enemy near Brighton, and their performances may be summarised as follows:—

On Sunday, April 5, one bird flew from the British force at Brighton to the British at Dover with the message "Enemy met with on the Downs near Stanmer Park, and totally defeated."

Thus notwithstanding the (supposed) failure of all other means of communication, over a distance of some seventy miles as the crow flies—the British forces at Dover were apprised of the momentous fact that the invaders had been totally defeated at Stanmer Park. This bird left Brighton at 9-30 A.M., but did not reach Dover till 3-30 P.M., the slow velocity being due to its having been only partially trained, and to the hazy state of the atmosphere. It is, however, to be remembered that trained birds, in favourable weather, can fly long distances at a velocity of over fifty miles an hour; for instance, in a pigeon race from Sandhurst to Brussels, which took place last September, and in which some five hundred birds competed, the winner made a velocity of 1,560 yards per minute, and sixty birds reached their lofts within one hour of the arrival of the winner.

On Monday, April 6, three birds were tossed at different hours by the British force at or near Brighton for the British force at Dover, and one bird by the enemy near Brighton for the enemy near Walmer. They all performed their allotted tasks, reaching their destinations between 1-25 P.M.

and 4-15 P.M. It is not stated at what times they were despatched, but it is probable that their velocity was indifferent, owing to thick and stormy weather. One of these birds had no message attached, the presumption being that it was too hastily liberated by an unpractised hand. Each of the other three was the bearer of news. One message received by the Dover British force at 1-45 P.M. was "Brighton British troops rapidly concentrating near Falmer; enemy about 7,000 strong, in position on Newmarket Hill." Thus again information of much importance was conveyed to the English commandant at Dover, and which but for the messenger pigeon he could not have received.

The enemy, however, were not idle, and, profiting by the capture of the English birds at Walmer, despatched from Brighton to their general at Walmer, and received by him, a pigeon conveying the following information: "Expedition has pushed its advanced troops to Newmarket Hill: English concentrating from Brighton and London at Falmer, about 1,200 strong."

This is the first occasion on which pigeons have been used as messengers in connection with military operations in England, though in most Continental countries a corps of trained birds forms part of the military establishment.

It is remarkable that in spite of the Franco-German War of 1870 having amply demonstrated the use of pigeons in warfare, no steps whatever have been taken in this country to organise a system of communication by this means—a means peculiarly suited to England, where coast defence and rapid and reliable communication between the several fortresses and other points is of paramount importance. It is obvious that facilities of inter-communication between forts or fortresses would be specially applicable to moving bodies of our troops, as indeed, the experiments above described sufficiently prove.

It is the more to be regretted that a matter of such moment should continue to be overlooked, when it is remembered that each fort or garrison on the coast or in the interior could be supplied and maintained with an efficient number of pigeons at the cost of a mere bagatelle—a cost, in fact, which is far exceeded by that incurred by a single discharge of a big gun.—*U. S. Gazette*, 11th April 1885.

The Russian Navy.

The *Times* place before its readers a complete list, compiled from the register at Lloyd's, of the vessels in the Russian Imperial Navy, with their names, the distribution of them, their nature, and, in the most important cases, their armour, the number and calibre of their guns, the horse-power, and the displacement or tonnage. The list includes all vessels of every description registered up to the beginning of this year:—

The following vessels are not allotted to any particular station:—

Peter the Great, turret ship, with 14 in. of armour at waterline, eight guns, four of them 12 in., four 4-pounders 8,258-horse power, and 9,965 tons displacement.

Demetri Donskoi, cruiser, 7 in. armour at waterline, 16 guns, two 8 in. and 14 6 in., 7,000-horse, 5,796 tons.

Vladimir Monomarkh, cruiser, 7 in. armour at waterline, 19 guns, four 8 in. and 12 6 in., 7,000-horse, and 5,796 tons.

Admiral Tchitchagoff, sea-going turret ship, 6 in. of armour at waterline, two 11 in. guns, 2,060-horse, and 3,492 tonnage.

Admiral Spiridoff, sea-going turret ship, 6 in. of armour at waterline, two 11 in. guns, 2,007-horse, and 3,492 tonnage.

Admiral Greig, sea-going turret ship, with 4½ in. of armour at waterline, three 11 in. guns, 2,031-horse, and 3,491 tonnage.

Admiral Lazareff, sea-going turret ship, with 4½ in. of armour at waterline, three 11 in. guns, 2,004-horse, and 3,461 tonnage.

Admiral Popoff, circular ironclad, with 16 in. of armour at waterline, two 12 in. guns, 3,666-horse and 3,580 tonnage.

The following six vessels, which were not completed at the end of last year, come under this class. The first three, it will be seen, are in all respects alike. The thickness of the armour is in each case given as at the waterline:—

Catherine II., cruiser, 15 in. to 16 in. armour, 13 guns, six of them 12 in. and seven 6 in. 9,000-horse, and 10,800 tons displacement.

Tehesma, cruiser, 15 in. to 16 in. armour, 13 guns, six 12 in. and seven 6 in. 9,000-horse, and 10,800 tonnage.

Sinope, cruiser, 15 in. to 16 in. armour, 13 guns, six 12 in. and seven 6 in. 9,000-horse, and 10,800 tons.

Rynda, cruiser, 1½ in. armour, 14 guns, eight 6 in. and three 5 in., 3,000-horse, and 2,950 tons.

Admiral Nakimoff, cruiser, 8 in. to 10 in. armour, 14 guns, four 9 in. and ten 6 in., 8,000-horse, and 7,781 tons.

Alexander II., cruiser, 14 in. armour, 14 guns, two of them 12 in., four 9 in., and eight 6 in., 8,000-horse, and 8,632 tons.

Thus it will be seen that the vessels that have no station allotted to them are four sea-going turret ships, eight cruisers, and one circular ironclad, with an aggregate of 130 guns, 76,426-horse power, and a total tonnage of 90,426. Six of the turret ships, carrying 78 guns, 46,000-horse, and 51,793 tons displacement are not yet completed.

The Baltic Fleet.

The fleet stationed on the Baltic contains the following ironclad frigates:—

It may be noticed here that the following four ships of the Admiral series, Greig, Lazareff, Spiridoff, and Tohitchagoff, which have been already mentioned, are sometimes reckoned part of the Baltic Fleet.

The following 10 single turret monitors, each with five layers of 1 in. plates and two 9 in. guns.

Sevastopol (no detail given).

Petropavlovsk, 4½ in. armour (number and calibre of guns not stated), 2,806-horse power, and 6,040 tons displacement.

Kniaz Pojarski, 4½ in. armour, 10 guns, eight of them 8 in. and two 6 in., 2,835-horse, 4,505 tons.

Minin, 7 in. armour, 16 guns, four 8 in. and 12 6 in., 5,290-horse, and 5,940 tons.

Three iron floating batteries:—Pervenetz, 4½ in. armour, 15 guns, ten 8 in., four 6 in. and one 9 in., 1,067-horse, and 3,227 tons.

Netron Menia, 4½ in. armour, 14 8 in. guns, 1,632-horse and 3,340 tons.

Kreml, 6 in. armour, 14 8 in. guns, horse power and displacement not mentioned.

Four double turret monitors:—

Smertch, 4½ in. armour, two 9 in. guns, 785-horse, 1,520 tons.

Tcharadeika, 4½ in. armour, four 9 in. guns, 785-horse, and 1,880 tons.

Roussalka, 4½ in. armour, four 9 in. guns, 705-horse, and 1,880 tons.

Peter Veliki, details not given.

The following 10 single turret monitors, each with five layers of 1 in. plates and two 9 in. guns.

Latnik, 1,515-horse, 490 tons.

Bropenossetz, 1,380-horse, 480 tons.

Ouragan, 1,415-horse, 432 tons.

Tiphon, 1,668-horse, 430 tons.

Lava, 1,590-horse, 335 tons.

Peroun, 1,550-horse, 338 tons.

Streletz, 1,430-horse, 444 tons.

Eduinoroz, 1,406-horse, 460 tons.

Koldoun, 1,866-horse, 480 tons.

Veshtchoun, 1,450-horse, 530 tons.

Two ironclad corvettes, of which one, the Alexander-Nevski, has no details given; the other is General Admiral, 6in. armour, six guns, four 8in. and two 6in., 6,300-horse, and 4,000 tons.

Four screw men-of-war, Imperator Nikolai, Sinop, Tzessarevitch, and Retvizan, of which no details are given.

Four screw frigates, Svetlana, Peresvet, Osliaha, and Gromaboy.

Eleven corvettes, with details only given in the case of one Vitiaz, 1½in. armour, 10 6in. guns, 3,000-horse, and 2,950 tons.

The other ten are Boyarun, Voyevoda, Griden, Bayan, Kalevala, Bakgatyr, Variaz, Gilisk, Krasnaia Gorka and Askold.

Six clippers—Gaidamak, Visadnim, Jeutchong, Aimaz, Izoumroud, and Yakhont.

One frigate, Gerzog Edinbtirgsky with 6in. of armour, 10 6in. guns, 5,222-horse power, 4,602 tonnage.

Four paddle frigates, Rurik, Olaf, Smely, Khratry.

Four steam yachts, Derjava, Shtandart, Alexanderia and Strelina.

Four steam vessels, Vladimir, Solombala, Volga, and Dniepr.

Eight yachts, Koroleva-Victoria, Zabara, Nicss, Volna, Kostia, Tzarevna, Goloobka, and Marevo.

Four lighters, Ouvalen, Kadet, Gorlitzo, and Julia.

One screw transport, Artelstchik.

The screw schooners, Bakon, Compas, and Sextan.

Twenty-one iron screw gunboats :—Opyt, Priboy, Marevo, Ooptchik, Vedma, Korshoun, Stchit, Grom, Sneg, Kartetch, Zyb, Molnia, Otliv, Rossa, Bouian, Likhatch, Khvat, Zabiaka, Tolcheia, Osseter, and Tresk.

Six screw gunboats :—Prokattnik, Eris, Boorcom, Tootcha, Vikhr, and Dojd.

Thirteen paddle vessels :—Neva, Ladoga, Ilmen, Nerka, Yastreb, Onega, Kourier, Rabotnik, Ijora, Stavianska, Peterbourg, Ermolov, Attillerist.

Eleven screw vessels :—Vestovoy, Razvlny, Mekhanik, Lot man, Keldountchik, Lot, Laz, Samovar, Flugarka Veliki-Kniaz-Wladimir, and Veliki-Kniaz-Alexis.

One sailing vessel, Peter Veliki; one clipper, Djigyt; three schooners, Zorkaia, Straj, and Tchassovoi.

Fifteen steamboats :—Brigitovka, Pojarni, Koptchik, Kretchee, Gagary, Lebed, Laslotchka, Tchaika, Nirok Dagmar, Shootka, Ptitchka, Oodatcha, Miner, and Fontanka.

Five floating lights, Kalbodegroonsky, Rovelsteinsdy, Londonsky, Elaginsk, and Bosshago-Nevskago-Far-vatera.

Seven clippers :—Kreisser, Nalesdnik, Rasboinik, Strelok, Plastoon, Vestnik, and Opritchnik.

Two cruisers :—Afrika and Zabiaka.

Ninety torpedo boats :—Vsriv, Aist, Akoola, Albatros, Bekas, Bomba, Boolava, Belooga, Vorobei, Vorona, Voron Galka, Gleokhar, Gorlitz, Gratch, Gooss, Delphin, Drakon, Drosd, Drokhva, Diatel, Javoronok, Jooravn, Zmejia, Ziablik, Ivolve, Indiovk, Cacadoo, Kambala, Canareika, Karas, Kasatka, Colibri, Konoplianka, Koptchik, Kopje, Korooshka, Kretchet, Crocodil, Kookooshka, Kooritza, Kooropatka, Lastotchka, Lebed, Leshtch, Losos, Loock, Malinovka, Metch, Nalim, Nviok, Orel, Osetr, Pavlin, Palitza, Pelikan, Perepel, Piskar, Plotva, Podorojnik, Popoogai, Prashtkh, Petvokh, Raketa, Raibtkhik, Salamandra, Samopal, Sardinka, Sviristel, Selezan, Seld, Sig, Sirena, Skvoretz, Suigir, Sova, Sokol, Solovei, Som, Strela, Soodak, Teterov, Treska, Oogor, Oodav, Ooj, Ootka, Fasan, Filin, Forel, Chameleon, Tzaplia, Tchaika, Shtik, Jadro, and Jastreb.

The Black Sea Fleet.

One circular ironclad. Novgorod, 9in. armour, two 11in. guns, 2,000-horse, and 2,490 tons.

The circular ironclad, Admiral Papoff, mentioned above in the unallotted class, is sometimes reckoned as part of the Black Sea Fleet.

Two monitors, each with 3½in. armour :—Nikopol, 100-horse and 275 tons, and Sistovo, 80-horse and 384 tons.

Four screw corvettes :—Lvitzia, Pamiat-Mercuria, Yastreb, and Sokol.

Seven screw schooners :—Pitzunda, Peseonape, Tonapše, Kelassoury, Souksou, Ingoul, and Redaut-kale.

Four screw transport schooners :—Elborouss, Bambory, Don and Salgir.

Three steam yachts :—Livadia, Tigre, and Standart.

Twenty-four steam vessels :—Taman, Kaabeck, Tourok Soulin, Inkerman, Tchatyrdag, Prout, Penderaclia, Akkerman, Baticoshka, Bottoon, Bratetz, Dotchka, Golooborchik, Matooshka, Rosimoy, Sestrizta, Meteor, Brestovatz, Ablanovo, Bogot Merop, Ericlik, and Galvaner.

Two tenders, Boug and Berezan ; one screw transport, Voyn ; two steam schooners, Novorossiysk, and Abin ; one schooner, Gonetz ; one steamboat, Boviook Dore ; two barges, Zimnitza and Petroshani ; five floating lights, Adjigiolsky, Beglitsky, Pestchanyeh-Ostravov, Kertchensky, and Toozlinsky.

Fourteen torpedo boats :—Tcherepakha, Bitcheck, Karabine, Kephall, Chijik, Soroko, Sterliad, Strauss Shtcheglenak, Shtchooka, Jashtcheritzta, Skoombria, Sooltanka, and Scorpion.

The Siberian Flotilla.

Four screw gunboats :—Morge, Gornostai, Sobol, and Nerpa.

Five steam vessels :—America, Amoor, Booksir, Polza, and Oospekh.

Six schooners :—Yermark, Toungus, Aleout, Vostok, Strelak, and Farwater.

Two screw transports, Yaponetz, and Mandjur ; two lighters, Konegda and Souifun ; one clipper, Abrek ; two transports, Irtish and Baikal ; one gunboat, Sivortch ; three steamboats, Nadejda, Palvo, and Kit ; one steam tug, Sahalin.

The Caspian Flotilla.

Three screw schooners :—Persianin, Khivinetz, and Bukharetz.

Three screw gunboats :—Tuelen, Sekira, and Pishtchal.

Nine steamers :—Ural, Nass-Edin-Shah, Derbent, Koura, Bakon, Krasnovodsk, Bourlak, Araks, and Tchikishliar.

Nine transports :—Kazak, Astrabad, Aist, Kolpik, Tchaika, Martishka, Baklan, Nirok, and Gagara.

Three schooners :—Komar, Moukha, and Lotzmam.

Four boats :—Provorny, Legky, Bistry, and Skory ; and three floating lights, Amooradesky, Krasnovodsky, and Tchistobansky.

The Aral Flotilla.

Five steamers :—Porovski, Syr-Daria, Aral, Tashkent, Samarkand.

One screw boat :—Obroutchev.

The White Sea Flotilla.

Two screw schooners—Polar Star and Samoyed.

One steamer, Kouznetchikha.

The Volunteer Fleet.

There are also the following vessels in the Russian Volunteer Fleet :—
Nijni Novgorod (late Saxonia, s.), brig, of 1,817 net and 2,672 gross tonnage, built at Greenock in 1857, of 300-horse.

Petersburg (late Thuringia, s.), brig, of 1,738 net and 2,897 gross tonnage, 650 nominal and 2,600 effective horse-power. This vessel was built at Greenock in 1870.

Rossija (let Holsatia, s.), brig, of 2,012 net and 3,156 gross tonnage, 500 nominal and 2,000 effective horse-power. This vessel was also built at Greenock in 1868.

Vladivostok, schooner, 678 net and 1,200 gross tonnage, 160 nominal and 800 effective horse-power, built at Renfrew in 1880.

Yaroslavi, barque, 1,203 net and 2,005 gross tonnage, 609 nominal and 2,400 effective horse-power, built at La Seyne in 1880.

Two cruisers, Europa and Asia.

I was Secretary of this Institution from April to October of 1886. W. G. J.

92 ? of M. O. J.

... record that the
... of the United
Service Institution of ... is a decided im-
provement over most of its predecessors. This
journal which is published at Simla, and which
is devoted to purely military matters, has long
been chiefly noticeable for its extreme dullness
and the narrowness of its range. Too purely
professional, for the general reader, and not
varied enough to interest any considerable
number of military men, it has only met with
a very scanty amount of recognition from
either. But if the promise of the present ...

... use, he would have killed his man, and been
still equally ready to kill a dozen more. And
Major King Harman further enforces his argu-
ment by the case of the officer who broke his
sword when trying to cut a man down, and
then felled his opponent by a blow in the face
with the hilt. In fact, if the skill of our
officers in using their sabres was but equal to
their bodily strength, they would be the finest
swordsmen in the world.

the Chair.

IR VOLUNTEER

C.I.E.,
of India.

General Espinasse,
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"Hence tendencies," and other feeble jokes, to bring patriotism and "Hence" into contempt, to ridicule those who have endeavoured to disturb a fool's paradise, by pointing out the rocks on to which our country is drifting—it has served as an excuse for mean and cowardly counsels—for the desertion of friends and allies,—for the dishonour of our good name and prestige as a nation.

And yet what is Jingoism?

"We don't want to fight, but if forced to do so, it will be with the stern determination to go through with it." It is essentially the admirable sentiment which Shakespeare has put into the mouth of Polonius, when giving parting advice to his son—

"Beware
Of entrance to a quarrel, but being in,
Bear it that the opposer may beware of thee.

This above all :—To thine own self be true
And it must follow, as the night the day,
Thou canst not be false to any man."

It is the substance of that trite motto, which has been frequently selected by members of this Institution, when writing under a *nom-de-plume* : "Si vis pacem, para bellum."

It is that which has given birth to our splendid corps of volunteers in England, and has probably saved us from the horrors of invasion. There is no occasion to be ashamed of the taunt of "Jingoism." Shame to those who for party purposes have endeavoured to discourage patriotism and manliness; who, by their timid vacillating counsels, have brought disgrace and humiliation on our nation.

If it be the *esprit militaire* of England, as contrasted with those weak vacillating counsels of concession which, while humiliating us, involve us in war, which court insult by strong words followed by weak action—if, as I understand the term, a "Jingo" be the very opposite to that which, in my school days, we termed a sneak—then I say the more of them we have the better.

Possibly some of those whom I address, being military men, *do* want to fight; but as a Civil Engineer I represent a class in India, who *don't* want to fight; but who, if fighting should be necessary, desire to take their share in the coming struggle, and to spare no sacrifice to protect and uphold the honour and interests of Greater Britain; and I think I am warranted in my belief that, in the hour of trial, the Civil Engineers, whom I have the honour to represent, will acquit themselves well,—when I recall the gallant defence of the outpost at Cawnpore, and the brilliant resistance at Arrah, during the Indian Mutiny, by the Civil Engineers of the East Indian Railway.

The Franco-Prussian war, however, has taught us a lesson respecting the efforts of such volunteers, that it would be well to take to heart. During the invasion of France the patriotic feeling of the invaded people gave rise to the formation of a body of Frano-Tireurs. But these volunteers, having no military organization, were comparatively inefficient; and, as they were not recognized by the rules of war, they received no quarter when captured, but were shot without mercy.

Had the Franco-Tireurs been properly organized, it is probable that the invasion of France would have been attended with very different results.

The first point then, on which I would insist, is, that those men, who may wish to take part in the defence of their country, should not be placed in the false position of the Franco-Tireurs; that their efficiency should be increased by having their duties and work distinctly defined; and that no time should be lost in qualifying them, as far as possible, so that, when the time arrives for their employment, they may be found valuable auxiliaries to the regular force.

But volunteers cannot be rendered efficient at short notice, and there can be no greater mistake than that of postponing preparation until the day of action.

England is, as a rule, notoriously backward in her preparations for war; her peaceable inclinations, her belief in her natural strength, and a species of good-natured contempt for her enemies, have led her to neglect preparations, until some unexpected event has disturbed her security, and caused her to wake up to the necessity for action.

The Franco-Prussian war has taught us many useful lessons, but we do not yet appear to have profited, as we ought, by them.

The success of Germany was entirely due to the care and forethought with which every possible contingency had been anticipated. It was not that the French were unprepared, so far as preparation is usual; from all the accounts I have seen, it has appeared to me that France was in a far better state of preparation than England generally is, when she drifts into war; but Germany was in an *abnormally perfect* state of preparation. Warned as she had been by the events following the battle of Sadowa that war with France must before long break out, she steadily and unostentatiously prepared for it.

When England commences a war she generally finds she has undervalued her opponent's strength, and over-estimated her own; but, with the continuance of the war, she corrects her mistakes, and gathers strength, though, if momentary gleams of peaceful sunshine arise, she reduces her army, cuts down her navy, only to have to resume her preparations at an enormously increased cost, and under circumstances of aggravated difficulty.*

* As an example of the want of forethought in English war preparations, I may quote a very recent instance in the case of the Suakim Railway as described in *Engineering* for May 22nd, 1885 :—

"A Railway was an absolute necessity; and a necessity for which the authorities were quite unprepared. They had no organisation to meet the case and not even a recognised paper scheme; the very question of gauge was quite undetermined, and in the few days that preceded the final orders, every known size, from 18 inches to 4 feet 8½ inches, was proposed in succession, and abandoned. We were found, as usual, completely behindhand, and a question which must have exercised the mind of every military man, in his individual capacity, had apparently received no official attention whatever. It is true that some little effort had been made to instruct the Royal Engineers in the duties of engine-drivers and guards, and that a detachment had been attached for a time to the

In 1882, I wrote respecting the stoppage of the Kandahar Railway as follows : " If the policy should be vacillating, it is impossible to foresee what the railway may cost. It is much to be regretted that operations on the Kandahar Railway have been stopped, for the time will surely come, sooner or later, when this railway will be *urgently required*, and it is not a work that can be pushed rapidly. When the need for it is felt, it will probably be too late to construct it in time to be of any use ; and I would earnestly urge the desirability of going on steadily with some of the heavy works, such as the Babeh-Kuch Tunnel, the Kochali Tunnel, the works on the Chuppar Rift, and those beyond the Kutch Valley with as little delay as possible.

" A few companies of Sappers, with the tunneling machines we have in the country, might be very usefully employed in pushing the headings through some of the more important tunnels."

This advice was unheeded, and what is the result ? The railway has now to be pushed on at an enormously increased cost ; and should war now break out, it will not be possible to complete it in time to be of any use ; whereas, if the construction had not been stopped, the railway would, by this time, have been finished at a moderate cost, and we could now have poured troops and stores into the district of Pishin.*

Russia has now shown her hand, and convinced even those most unwilling to be convinced, of her designs on India ; even if peace be patched up, its duration cannot be long, and England should strain every nerve to be ready, and not relax one iota of her preparations.

Never was patriotism more needed than at the present moment, when England is isolated, and when there has arisen in that country a class of shallow-thinkers, who, in fear of being influenced by what Herbert Spencer terms *the bias of patriotism*, have gone from the perihelion of patriotism to the anthelion of the " anti-patriotic bias," against which Herbert Spencer has also warned his readers. This bias, he observes, is displayed so frequently and conspicuously as to affect the public opinion in an injurious way, and he attributes the prevalent fashion of self-depreciation, in some cases, to disgust at the jaunty self-satisfaction caused by the bias of patriotism, when excessive, and in other cases to affectation or ignorance. He might have added that in some cases it may arise from that unworthy feeling which sacrifices country to party, or to an unhealthy craving after notoriety which is more easily achieved

trains of one of the southern lines, but the question of building military railways, to follow the progress of an army, had been shelved. The fact is that all preparations cost money, and no political party has the courage to increase the regular taxation. Matters are allowed to slide, until a crisis arises, and then money is disbursed with a lavish hand, and is raised by an extra screw on the income tax on the plea of urgent necessity. The result is that the actual expenditure is greater, and that no experience is gained. Our officers return without any increase of knowledge, and the next campaign is commenced and conducted on the same haphazard plan. Thus, when a railway becomes an absolute necessity, we exhibit before the world such a spectacle as that to be seen on the Red Sea."

* This was written at a time when a declaration of war appeared to be imminent

by depreciation than by praise. It was this "anti-patriotic bias" which caused one of our best and most humane generals, when fighting bravely against overwhelming odds, to be denounced as the *Butcher of Cabul*. It was this bias that has brought out men like Mr. Wilfred Blunt to preach sedition, and vilify his fellow-countrymen in India—one who obtained his partial and prejudiced data from those who seek to foment discord—the "Indian Thersites," of whom Sir Lepel Griffin writes:—

"He disheartens the loyal, and encourages the traitor; and if my protest against the mischievous tendency of his writings should appear to be too warmly framed, and if I have refused to his expressed convictions the negative merit of honesty, it is that his career, both in Egypt and India, has convinced me that his mission in life is less the champion of the distressed than the humiliation of his country."

It is this anti-patriotic bias to which Professor Burrows alludes in writing: "Still are heard from the lips of public men the most unworthy exposition* of British foreign policy: still, with an air of philosophical authority, men warn us against concerning ourselves with the affairs of the continent; we are still recommended to relinquish this colony, or that military post for fear of offending sensitive neighbours, or being called upon to engage in the defence of our dependencies; we are told to measure our obligations by the mere calculations of profit and loss—calculations not only illusory and temporary in themselves, but utterly inadequate to bear the weight of the vast issues requiring to be balanced."

Too many seem to realise Burke's glowing denunciation of those whom he calls "vulgar politicians":—

"A large, liberal and prospective view of the interests of states passes with them for *romance*, and the principles that recommend it for the *wanderings of a disordered imagination*. Littleness in object and in means to them appears *soundness and sobriety*; they think there is nothing worth pursuit, but that which they can handle, which they can measure with a two-foot rule, which they can tell upon ten fingers."

Professor Seely writing in the same strain:—

"There is something fantastic in all those notions of abandoning India which are so freely broached among us. Have we really so much power over the march of events as we suppose? Can we cancel the growth of centuries for a whim or because, when we throw a hasty glance at it, it does not suit our fancies?" * * *

* I may quote an example of such *unworthy expositions* taken from an English paper, dated May 30th, 1885:—

"A wise statesmanship would refuse to stay any longer in Egypt without some European assent to our action there. It would restore Cyprus to Turkey, and Heligoland to the Danes or Germans. It would make arrangements with Spain for the ultimate cession of Gibraltar, cease to threaten China, and honestly labour for the day when the Government of India may be handed over to the native races which inhabit that country."

This programme is reported to have been laid down by Mr. Harrison in one of his discourses to the mild man-worshippers of Newton Hall.

"It is true that we in England have never accustomed our imaginations to the thought of Greater Britain. Our politicians, our historians, still think of England (*not of Greater Britain*) as their country : they still think only that England *has* colonies, and they allow themselves to talk as if they could easily whistle them off, and become again with perfect comfort to herself the old solitary Island of Queen Elizabeth's time, *in a great pool a swan's nest*. But the fancy is but a chimera produced by inattention, one of those monsters, for such monsters there are, which are created, not by imagination, but by the want of imagination."

One writer strongly imbued with the anti-patriotic bias advocates the abandonment of India in a paper entitled "*Why keep India?*"* and endeavours to discount the opinions of those who really know something about India, by impudently putting forth the axiom that "the mere fact of having lived long in India, and held high office there, positively warps the mind in estimating the question in hand"—forgetting, meanwhile, the reverse aspect of the case that a long residence in little insular England, narrows the mind and prevents a comprehensive view of any large question.

Anglo-Indians or colonists, returning to England, are astonished at the petty narrow-mindedness and absence of grasp they find there ; and their want of sympathy with such littleness is accounted for by a "warp in the mind."

It is instructive to compare the writings of two persons originally of this school : one, the author of "*Why keep India?*" who writes in presumptuous ignorance of facts ; the other (Mr. Edgar Vincent), who, having seen for himself, has not only been converted, but has had the honesty and moral courage to avow his conversion.

The former writes of the "*Imperial Party*": "*They have tried to cozen the English people into the belief that there is something grand and fine in holding down 240,000,000 of squalid fellowmen under an iron, despotic rule, and grinding from them the last pice by crushing taxation.*" The latter, who has taken the trouble to inform himself of the real facts of the case, writes :—

"I was much impressed, when in India, with two things : first, *the enormous advantages we have heaped on that country ; through the whole of that vast continent of 200,000,000 souls, no sword can be unsheathed without our sanction. We have knitted together wrecks of ancient kingdoms with the railway and telegraph. In every city we have opened schools and hospitals, and a native press is springing up in all the great centres of population. Enormous tracts of land have been redeemed from desert by our irrigation works : under our rule the population flourishes and increases.*"

Now which of these statements so different in character is likely to be correct ?—that of the man who writes in prejudiced ignorance of the subject, or that of the man who has travelled, who has acquainted himself with the real facts of the case, and has learned the useful lesson

* *Why keep India*. By Grant Allen. *Contemporary Review*, October 1880.

that his little Peddlington—whether it be Birmingham, Manchester, or Liverpool—is not the centre round which the universe rotates. No doubt the writer of “Why keep India?” will believe that the short visit to India has warped the mind of the convert.

The narrow-minded thinker above quoted argues selfishly: “India is of no real use to us; we should be richer, stronger, better, happier without it. We are cramped, distracted, impoverished by it.”

If India be not remunerative, who is to blame? Surely the class to whom this writer belongs.

India has every requisite for the production of unbounded wealth for the employment of untold capital. It has wonderful natural resources, whether agricultural, mineral, or industrial; but they are to a great extent dormant. It has coal of an excellent character, and inexhaustible in quantity; it has fine petroleum, large supplies of timber and charcoal: it has iron of extreme purity, spread wholesale all over the country,—in most places to be had by light quarrying or collection from the surface: it has chrome iron, capable of making the finest Damascus blades: manganiferous ore: splendid hematites in profusion. It has gold, silver, antimony, tin, copper, plumbago, lime, kaolin, gypsum, precious stones, asbestos. Soft wheat, equal to the finest Australian: hard wheat, equal to the finest Kabanka. It has food grains of every description: oil seeds, tobacco, tea, coffee, cocoa, sugar, spices, lac, dyes, cotton, jute, hemp, flax, coir, fibres of every description: in fact, products too numerous to mention. Its inhabitants are frugal, thrifty, industrious, capable of great physical exertion, docile, easily taught, skilful in any work requiring delicate manipulation. Labor is absurdly cheap: the soil for the most part wonderfully productive, and capable of producing crop after crop without any symptoms of exhaustion. The present yield of wheat is about 26,000,000 quarters, or about 9,500,000 quarters in excess of the total imports of wheat into England: and in the Punjab alone there is cultivable waste land sufficient to produce 12,000,000 quarters, besides enormous tracts in Burmah and other parts of India, only requiring irrigation or population to bring them under the plough. England imports annually commodities to the value of about £148,500,000 sterling, under six heads alone,* a large portion of which might be diverted to India by simply adopting a preferential tariff slightly favourable to her dependencies. Take, for example, wheat. A slight tax on American and Russian wheat would suffice to turn the whole of the wheat import trade to India and Australia. Such a tax would, I believe, tend eventually to lower, rather than raise, the price of wheat in

* Cotton	...	...	...	...	£	37,800,000
Silk	...	...	...	...	"	2,400,000
Grain	...	...	...	...	"	66,800,000
Flax	...	...	...	...	"	8,700,000
Sugar	...	...	...	...	"	22,400,000
Tea	...	...	...	...	"	10,900,000
						<hr/>
						£ 148,500,000

England, because India would steadily go in for the production of wheat, if its calculations were not liable to be disturbed by a slight fall in the price of wheat in America or Russia, which might throw back a quantity of wheat on the hands of the Indian producers or dealers.

Properly managed, India should be a source of immense wealth to England, but much of the trade which should flow from it has, with inconceivable folly, been *thrown into the hands of the Russians impoverishing us, while furnishing our enemies with the sinews of war to be used against us.*

But to pursue this subject would be to digress from the point of this lecture; and I have merely alluded to it in protest against the unpatriotic counsels of those who have actually gone so far as to deprecate, at a public meeting, resistance to the invasion of England, because, if England were conquered by France, the ultimate union of the two countries would promote free trade; who care not who rules, so long as their mills work; whose ideas of honor, justice, and morality are centred in their pockets; who can contemplate the idea of the ruin of India or a colony with philosophical indifference; who can endorse, with condonement, the fruitless slaughter of our brave soldiers, the massacre of women and children, and the murder of Gordon—but are roused in fury to turn out the Ministry for the imposition of a *tax on their beer*.*

The Anglo-Indian is told that he is too much tinged with the spirit of ascendancy, which must be checked; but with the loss of this spirit we lose India,—England loses its greatness,—and Europe its liberty. Perse India!! “Why keep India?” is the cry.

Why keep India? Because, if we voluntarily abandon India, we plunge into anarchy and ruin a population nearly equal to that of Europe;† because

* At the time this was written the Ministry had just been turned out on the beer-tax.

† Population of United Kingdom in 1880				
	France	...	...	34,650,000
"	Germany	...	...	37,450,000
"	Austria	...	...	45,260,000
"	Italy	...	...	27,830,000
"	Spain	...	...	28,910,000
"	Portugal	...	...	16,290,000
"	Belgium	...	...	4,350,000
"	Holland	...	...	5,480,000
"	Denmark	...	...	4,060,000
"	Sweden	...	...	1,960,000
"	Norway	...	...	4,610,000
"	Switzerland	...	...	1,950,000
"	Greece	...	...	2,810,000
"	Servia	...	...	1,690,000
"	Roumania	...	...	1,920,000
"	Turkey	...	...	5,330,000
		...	...	8,310,000
Total of Europe excluding Russia				228,550,000
Total population of India in 1881				254,000,000

we dishonorably evade the obligations which we have incurred by our acts as a nation ; because we leave to their fate those who have assisted us against the enemies of disorder ; because we ruin thousands of our fellow-countrymen, who, on the faith of our assurances, have made India their home, and embarked in it all their means ; because we sink the millions of money, invested both by private individuals and by the State, in manufactures, plantations, railways, irrigation, and other improvements ; and, lastly, because we lose (and justly so) our character and prestige for honour, integrity and courage.

If, on the other hand, we should allow India to be wrested from us by force, it could not be done without the loss of the flower of our army, and would probably be attended with the indiscriminate slaughter or worse than slaughter, of thousands of our fellow-subjects—men, women, and children ; and the ultimate subjection of the people of India to a nation notoriously cruel and unscrupulous, whose semi-civilisation is in some respects worse than barbarism. Those who raise the cry of "Pereat India !" little realize what that cry involves. We cannot abandon India even if we would. It only remains to us to organize every possible means of defence, of which volunteering is one of the most important.

Volunteering is popularly believed to be a phase of patriotism essentially belonging to the last quarter of a century ; but this belief is erroneous. The oldest volunteer corps is the honorable artillery company of the city of London, which dates from the reign of Henry VII ; and, though still called artillery, it comprises artillery, cavalry and infantry.

The English people, as a rule, have always responded to any appeal to their patriotism, and volunteers have never been slow in coming forward in time of need.

The year 1798 gave birth to a great change in the military policy of England, fraught with the most important effects, both upon the turn of public mind and the final issue of the war. This was the volunteer system, and the general arming of the people.

Mr. Dundas, the Secretary of War, in introducing a bill for the purpose, whilst not attempting to conceal the danger which menaced the country, sought only to rouse the determined spirit which might resist it, and spoke as follows : "The truth is undeniable, that the crisis which is approaching must determine whether we are any longer to be ranked as an independent nation. We must take steps which are best calculated to meet it ; let us provide for the safety of the infirm, the aged, the women, the children, and put arms into the hands of the people. We must fortify the menaced points, accumulate forces round the capital, affix on the church doors the names of those who have come forward as volunteers, and authorise members of Parliament to hold commissions in the army without vacating their seats. I am well aware of the danger of entrusting arms to the whole people without distinction : I am no stranger to the disaffection, albeit much diminished, which still lingers amongst us ; I know well that, under the mask of pursuing only salutary reforms, many are still intent upon bringing about a revolution, and for that purpose are willing to enter

into the closest correspondence with the avowed enemies of their country ; but, serious as the danger is of entrusting arms to a people embracing a considerable portion of such characters, it is nothing to the risk which we should run if, when invaded by the enemy, we were unprepared with any adequate means of defence. I trust to the good sense of the great body of the people to resist the factious designs of such enemies to their country. I trust that the patriotism by which the great majority of them are animated will preclude them from ever using their arms but for worthy purposes : I trust to their melancholy example which has been afforded in the neighbouring kingdom of the consequences of engaging in popular insurrection, for a warning to all Britons who shall take up arms, never to use them but in defence of their country, or the support of our venerable constitution."

Alison* remarks : "So obvious was the danger to national independence from the foreign invasion which was threatened, that the bill passed the house without opposition ; and in a few weeks 150,000 volunteers were in arms in Great Britain. Mr. Sheridan, as he always did on similar occasions, made a noble speech in support of Government. Another bill, which at the same time received the sanction of Parliament, authorised the king, in the event of an invasion, to call out the levy *en masse* of the population ; conferred extraordinary powers upon lords lieutenant and generals in command, for the seizure, on such a crisis, of horses and carriages, and provided for the indemnification, at the public expense, of such persons as might suffer in their properties in consequence of these measures. At the same time to guard against the insidious system of French propagandism, the alien bill was re-enacted, and the suspension of the Habeas Corpus Act continued for another year.

"The volunteer system met with perfect success in England, and brought on none of the evils which had been so sorely felt from the corresponding institution of the National Guards in France."

"The reason is obvious : the crisis in England at this period was national, in France in 1789 it was social. It is in general safe to entrust arms to the people when their national feelings are roused : it is always perilous to do so when their social passions are excited, and they see their real or supposed enemies in a particular class in their own country. The unanimity of Great Britain, during the latter period of the war with Napoleon, is an instance of the first : the convulsions of France and Germany, after the dethronement of Louis Philippe in 1848, an example of the second.

"The adoption of these measures indicates an important crisis in the war—that in which popular energy was first appealed to, in order to combat the revolution : and Government, resting on the stubborn evidence of facts, confidently called upon their subjects to join with them in resisting a power which threatened to be equally destructive to the cottage and the throne. It was a step worthy of England, the first-born of modern freedom, to put arms into the hands of her people,

* Alison's History of Europe, Vol. IV, Cap. XXV, para. 8.

to take the lead in the great contest of general liberty against democratic tyranny : and the event proved that the confidence of Government had not been misplaced. In no instance did the volunteer corps deviate from their duty : in none did they swerve from the principles of patriotism and loyalty which first brought them round the standard of their country. With the uniform which they put on they cast off all the vacillating or ambiguous feelings of former years : with the arms which they received they imbibed the firm resolution to defend the cause of England. Even in the great manufacturing towns and the quarters where sedition had once been most prevalent, the newly-raised corps formed so many centres of loyalty which gradually expelled the former disaffection from their neighbourhood ; and to nothing more than this well-timed and judicious step was the subsequent unanimity of the British Empire in the prosecution of the war to be ascribed. Had it been adopted earlier, it might have shaken the foundations of society and engendered all the horrors of civil war : subsequently it would probably have come too late to develop the military energy requisite for success in the contest. Nor were the effects of this great change confined only to the British Isles ; it extended to foreign nations and distant times. It gave the first example of that touching development of patriotic ardour which afterwards burned so strongly in Spain, Austria, Prussia, and Russia ; and in the British volunteers of 1798 was found the model of those dauntless bands by which, fifteen years afterwards, the resurrection of the fatherland was accomplished.*

In fact the "Jingoism" of the nation saved the country from invasion.

Again, in 1803, the manner in which the spirit of the nation asserted itself, when threatened with invasion by Napoleon, is described by Alison as follows :*

"Relying on the patriotism and spirit of the people, the administration made the most vigorous efforts for the national defence, in which they were nobly seconded both by Parliament and the people. Independent of the militia, 80,000 strong, which were called out on the 25th of March, and the regular army of 130,000 already voted, the House of Commons, on 28th June, agreed to the very unusual step of raising 50,000 men additional by conscription, in the proportion of 34,000 for England, 10,000 for Ireland, and 6,000 for Scotland, which it was calculated would raise the regular troops in Great Britain to 112,000 men, exclusive of the troops in the colonies, besides a large surplus force for offensive operations. In addition to this, a bill was brought in, shortly afterwards, to enable the king to call on the *levy en masse* to repel the invasion of the enemy, and empowering the lord-lieutenants of the several counties to enrol all the men in the kingdom, between 17 and 55 years of age, in different classes, who were to be divided into regiments according to their several ages and professions. But all persons were to be exempt from this conscription who were members of any volunteer corps approved of by His Majesty ; and such was the general zeal and enthusiasm, that in a few weeks 800,000 men were enrolled, armed and disciplined in

* Alison's History of Europe, Vol. V, Cap. XXXVII.

the different parts of the kingdom, and the compulsory conscription fell to the ground.

"This immense force which embraced all classes and professions of men not only was of incalculable importance, by providing a powerful reserve of trained men to strengthen the ranks and supply the vacancies of the regular army, but contributed in a remarkable manner to produce a patriotic ardour and feeling of unanimity among the people, and lay the foundation of that military spirit which enabled Great Britain at length to appear as principal in the contest, and beat down the power of France, even on that element where hitherto she had obtained such unexampled success.

"The spectacle now presented by the British Islands was unparalleled in their previous history, and marked decisively the arrival of a new era in the war—that in which popular sympathy was enlisted against the revolution, and the military usurpations of France had roused a unanimous resolution to resist its aggression. In the multitudes who now thronged to their standards of their country were to be seen men of all ranks and descriptions, from the prince of the blood to the labourer of the soil. The king had everything arranged for the expected invasion. He was to go himself to Chelmsford or Dartford; the Queen and Royal Family, with the treasure, were to be sent to Worcester; the artillery and stores from Woolwich to be sent into the interior by the Grand-Junction Canal. In the great approaching conflict everyone had his post assigned him. The merchant left his countinghouse, the lawyer his briefs; the farmer paused in the labors of husbandry, the artisan in the toils of his handicraft; the nobleman hurried from the scene of dissipation or amusement, the country gentleman put himself at the head of his tenantry. Everywhere were to be seen uniforms, squadrons, battalions; the clang of artillery was heard in the streets, the trampling of cavalry resounded in the fields; instead of the peasant reposing at sunset in front of his cottage, he was seen hurrying, with his musket on his shoulder, to his rallying point. Instead of the nobleman wasting his youth in the ignoble pleasures of the metropolis, he was to be found inhaling a nobler spirit amidst the ranks of his rural dependents. In the general excitement, even the voice of faction was stilled, the heart-burnings and divisions on the origin of the war were forgotten; the Whigs stood beside the Tories in the ranks of the volunteers; from being a war of opinion the contest had become one of nations, and, excepting in a few inveterate leaders of party in the legislature, one feeling seemed to pervade the whole British Empire. Mr. Sheridan, with that independent and patriotic spirit which ever distinguished him, at the close of the session, made an eloquent speech on moving the thanks of Parliament to the volunteers and yeomanry for the zeal and alacrity with which they had come forward in defence of their country; and thunders of applause shook the house when he declared it to be the unalterable resolution, not less of the legislature than the Government, that 'no proposal for peace should be entertained while a single French soldier had footing on British ground.'"

During the period of profound peace that succeeded the battle of Waterloo, the volunteer movement almost died a natural death, and but little was left, except the honorable artillery company volunteers, and some troops of yeomanry. But in 1859, England suddenly awoke to a sense of insecurity, amidst the enormous armaments of the continental nations, and the result was an enthusiastic volunteer movement. In a short time the volunteers numbered 150,000 men, and have since increased steadily, in spite of ridicule and predictions of failure, until the force now numbers upwards of 250,000* well-trained and disciplined men, and if those who have become efficient volunteers, but have retired into private life, were again to join the movement, in case of threatened invasion, it is probable that the numbers would be increased to 350,000 efficient men in a very short time. For it is estimated that the annual entrances and retirements from the volunteers amount to 12 or 14 per cent. of the total.

The attitude of the Government towards the volunteers has always been one of reserve ; leaving it in a great degree to its own management and to its own resources.

In 1860 the Government combined the companies into battalions, appointing paid adjutants, drill instructors, and inspectors under the control of the inspector-general of volunteers.

In 1879 the volunteers were placed directly under the Commander-in-Chief who appoints an Adjutant-General, responsible for the discipline and conduct of the volunteers.

When a company of sixty volunteers is formed, they are entitled to a captain and two lieutenants ; four companies are entitled to a major ; two companies are entitled to an assistant surgeon ; four companies to a surgeon ; six companies constitute a battalion for which Government provides an adjutant. If a corps should exceed twelve companies, it is divided into two battalions. All officers are appointed by the Crown, but non-commissioned officers are appointed by the commissioned officers. The paid officers are subject to the Mutiny Act ; but the other officers are not subject to it, except when they are embodied.

The country is divided into districts, and each district is commanded by a general officer.

Government gives a capitation grant, of 80 shillings per annum, for every efficient volunteer, and 50 shillings for each officer and sergeant holding a certificate of proficiency ; but this is a corps grant, and not personal.

Government provides arms and, to a certain extent, ammunition for practice. The different corps are allowed to select their own uniform subject to the approval of the lord-lieutenant, and no gold lace or bullion is allowed on volunteer uniforms. Those volunteers who are

* 15,000 cavalry and yeomanry.
43,000 artillery.
9,600 engineers,
189,000 rifle corps.

256,600

certified by the commanding officer to have a competent knowledge of the service, and to have attended the specified number of drills, are classed as "efficient."

The volunteer corps may not be used in times of public disturbance, but only when the country is invaded, or invasion is apprehended. The general commanding each district may in that case, with the consent of Government, call out all, or any, of the corps under his command, and any corps thus called out comes under the Mutiny Act. Every volunteer on joining must take the oath of allegiance. Whilst embodied the officers and men receive the same pay as that of the regular army.

In England the volunteer *Engineers* are enrolled under two separate systems, which, for distinction, I may call the "*Regimental*" and the "*Staff Corps*" systems.

The *Engineers* enrolled under the regimental system consist of 22 distinct corps, disposed as follows:—

- | | |
|-----------------------|--------------------|
| 1. Middlesex. | 12. Surrey. |
| 2. Lanarkshire. | 13. Hampshire. |
| 3. Edinburgh City. | 14. Glamorgan. |
| 4. Lancashire | 15. Essex. |
| 5. Newcastle-on-Tyne. | 16. Devon. |
| 6. Yorkshire. | 17. London. |
| 7. Gloucestershire. | 18. Flint. |
| 8. Cheshire. | 19. Northampton. |
| 9. Denbigh. | 20. Durham. |
| 10. Tower Hamlets. | 21. Somerset. |
| 11. Cumberland. | 22. Aberdeenshire. |

These corps make up a total of about 9,600 rank and file.

The strength of officers for every eight companies may be approximately represented as follows:—

- | | |
|-----------------------|----------------------|
| 1 Lieutenant-Colonel. | 1 Quartermaster. |
| 2 Majors. | 1 Surgeon. |
| 8 Captains. | 1 Assistant Surgeon. |
| 11 Lieutenants. | 16 Sergeants. |
| 1 Adjutant. | 32 Corporals. |

The officers consist chiefly of civil and mechanical engineers; and the non-commissioned officers and men, of foremen, smiths, carpenters, fitters, boiler-makers, and other artizans. The officers are admitted to a course of instructions, and go to Chatham for that purpose. They are exercised in manœuvres of various kinds in military engineering, and the defence of some of the English rivers by torpedoes is entrusted to them. The annual number of drills required for efficiency in recruits is 36, of which twelve are engineering, and for volunteers of more than eighteen months standing, fifteen drills, of which six are engineering. In other respects, this corps is similar in constitution to other volunteer corps.

The "*Staff Corps*" of volunteer engineers is altogether on a different footing. It has no force of privates or non-commissioned officers; but when work is to be carried out under its orders, it will be done by ordinary labor.

The normal strength of the officers is as follow:—

- | | | |
|----------------------|---------|-------------------------|
| 1 Honorary Colonel. | | 20 Lieutenant-Colonels. |
| 1 Lieutenant-Colonel | Comman- | 20 Majors. |
| dant. | | 40 Captains. |

But the corps is not up to its full strength.

The officers consist of the most eminent civil engineers, contractors, and railway managers, amongst whom are Sir John Hawkshaw, Sir Chas. Gregory, Sir John Cooke, Sir John Kelk, &c., &c., &c.

In case of invasion this corps would obtain large bodies of navvies, platelayers, and other labourers, throw up intrenchments, construct batteries to impede the advance of the invader; it would concentrate troops by railway, arrange for their detraining, push to the front stores, ammunition, and guns. All has been arranged beforehand under different assumed conditions of invasion; the number of trains, the men and labor required, the sources from which rolling stock, labor and materials would be obtained.

From time to time, exercises under various assumed conditions are propounded by the military authorities to this "Staff Corps" of engineer volunteers, who send in reports, in full detail, for approval. The staff, when visiting the prescribed positions to be defended, are accompanied officially by an officer of Royal Engineers, whose province it is to specify the dimensions of each earthwork, the number of guns, &c. The Staff Corps works out all the calculations necessary, and the contractor members of the Staff Corps, having unlimited command of labor, undertake to carry out the work. As the reports and proceedings of the corps are kept secret, it is supposed, by many, that the corps is a failure, for no results are visible to the outer world, nor could they be, except in case of invasion; but an admirable account of the corps is given by Archibald Forbes in the *Nineteenth Century* for April, 1885, at the conclusion of which he bears testimony to the practical value of this corps in the following terms:—

"How valuable, for purposes of national defence, is the loyal, zealous and practical co-operation with the military authorities of such a body of men as those who compose the engineer and railway volunteers staff corps; what has been written seems to me to prove up to the hilt."

In India, owing to the scattered condition of the Europeans and the drawbacks of the climate, the volunteer movement has not been as satisfactory as it should have been, for, out of a total of 203,000 of European descent, little more than 13,000 are enrolled in volunteer corps. Of these about 5,000 are railway volunteers.

The distribution of these is as follows:

ORDINARY CORPS.			RAILWAY CORPS.		
Bengal	...	1,576	East India Railway	...	1,154
North-West	...	1,604	Great Indian Peninsula	...	1,048
Punjab	...	848	S. P. & D.	...	748
Bombay	...	809	Eastern Bengal	...	163
Karachi	...	287	Northern Bengal	...	92
Nagpur	...	79	Tirhoot	...	70
Madras	...	1,436	Rajputana	...	636
Hyderabad	...	459	South Indian	...	236
Assam	...	313	B. B. & C. I.	...	263
Burma	...	759	Madras	...	329
Quetta	...	39	Burma	...	265
Total	...	8,299	Total Railway	...	4,994
			Other	...	8,299
			Grand Total	...	13,293

At present there are no engineer volunteer corps in India ; and yet I think that few would question the great need of such corps.

As a civilian, I have not the necessary experience in military technicalities to be able to work out, in all its details, the essential features of a practical scheme for the organisation of such a corps. I can merely indicate the general direction which I think such a movement should take, in hopes of provoking a discussion which may elicit from those present practical suggestions and advice as to the best mode of giving effect to the proposals I now bring forward.

Before I can do so, however, it is necessary to consider the *possible* rather than the *probable* contingencies which may arise ; and if, in doing so, I should seem to take a pessimist view of the situation, I trust that I may not be considered as an alarmist.

Those who are swayed by the anti-patriotic bias are fond of branding, as alarmists, those who prudently desire to be prepared for every emergency, but what would be thought of the military qualifications of the officer who, through fear of being thought an alarmist, allowed his position to be turned and surprised, from neglect to place sentries in a position not likely to be attacked. The *very want of precaution invites attack*. Common prudence therefore renders it desirable to take calm estimate of every *possibility*, in order to be prepared.

The Russians are now in a position to place a large force on the Afghan frontier, long before we can concentrate our troops there ; experience has shown that any treaty with Russia is not worth the paper on which it is written ; it is even worse than useless ; for, whilst, as an honourable nation, England is bound by such a treaty, Russia will break it at the first convenient opportunity.

The Amir is at present loyal, but it is impossible to say how long he may remain so, should Russia be strong enough to make him feel it his interest to side with the strongest.

Even should he remain loyal, it is difficult for him to answer for his subjects ; and, should our policy be weak and vacillating, it is quite within the range of possibility that the Afghans may join the Russians, and turn against us those arms of precision with which we have furnished them.

During the Afghan war, as I was returning from Kandahar, I fell in with some cannon sent by our government to the Wali of Kandahar, and I casually made the remark to Colonel Lindsay, who accompanied me, "I wonder how soon those guns will be turned against us."

In less than four months, although the Wali remained loyal, those guns *were* turned against us, and we had to retake them.

We must, therefore, consider a combined invasion of our frontier by Russians and Afghans as a *possible* contingency.

Next—our fleet is said to be not stronger than that of France, whereas it ought to be at least double its strength, in order to be on an equality with it, because it is dispersed over the whole world to protect our possessions.

The French have already shown an unmistakable disposition to pick a quarrel with us ; and, should their fleet combine with that of Russia, they might sever our communications with England ; or, at all events, keep our

fleet engaged in such a manner as to allow them to land troops on the coast of India.

Even, supposing that no such combination should take place, similar results might be effected by swift torpedo boats, which are now a formidable weapon in modern warfare.

The Russians are said to be stronger in this arm than the English, who have somewhat neglected this late phase of modern warfare.

If we had a considerable force of these swift torpedo boats in our important ports, such as Bombay, Karachi, the Hooghly, &c., they might sally out, like a swarm of hornets, and soon dispose of any chance ships that might otherwise bombard our towns or land troops; but unfortunately this mode of defence has been neglected; we must, therefore, regard the landing of troops on our coast as a second *possible* contingency.

Again, although the rulers of our native States are loyal, it is impossible to say what disaffection, intrigue, or disaster, may effect amongst them.

During the Mutiny many of the native rajahs remained loyal; but their loyalty did not prevent the massacre of our countrymen by their subjects. There is unfortunately much disaffection amongst some sections of the native community of British India, and, unfortunately, of late, class feeling has been injudiciously stirred up, so that a third *possible* contingency is that of a rising amongst the native population.

In considering the formation of the engineering volunteer corps for India it is evident, from the scattered condition of those of which such a corps should be composed, that it will be necessary to have recourse principally to the "staff," rather than the "regimental," system. But owing to the wholly different conditions in India, the constitution of such staff corps must differ greatly from that of the engineer volunteer staff corps of England.

The regimental system is applicable on railways, or in large towns, such as Calcutta, Madras, Bombay, Allahabad, and Lahore, where the number of volunteers would be sufficient to form both rank and file, or where a Sapper Company can be added to an existing body of volunteers.

In these days of arms of precision it is impossible to overrate the importance of hasty entrenchments and field fortifications, and the utility of the volunteers in India is very greatly impaired by the neglect to provide an engineering element in the force. I would strongly urge that to every corps there should be a Sapper Company, exercised in engineering drill and manœuvres, and capable of undertaking defensive operations on scientific principles. I am moreover strongly of opinion that *every railway volunteer corps* should be converted into an engineer corps; all that would be necessary to effect this conversion would be that certain military specialities should be added to the tools already in the railway stores; that the officer should receive special instruction in the technicalities of military engineering; and that the corps should go through a certain number of engineering drills.

Both officers and men in a *railway* volunteer corps are, by their

previous training, admirably qualified to undertake engineering operations with a very small amount of special training in the technicalities of military engineering; and the fact of being an *engineer* corps would in no way interfere with the efficiency of the railway volunteers as a *fighting* corps.

The concentration of troops by railway, and many services, similar to those which fall to the lot of the railway transport volunteer corps of England, should be performed by the railway volunteers in India; but it is further of importance that the railway volunteers should be capable of organizing defensive operations, of putting railway stations in a state of defence, of securing any portion of the railway from injury or seizure, of constructing travelling batteries, plated and furnished with electric light, for patrolling the line in disturbed times, and of performing other duties of a precautionary character. They should also frequently practise rapid loading and unloading artillery and cavalry.

The greater portion of civil engineers, however, are so scattered about India that they can only be utilized on the "*staff corps*" system, forming a body of officers and non-commissioned officers, supplemented by ordinary labour, when required to carry out defensive and other operations; just as the Sapper Corps of the Indian Contingent of the first Egyptian expedition was supplemented by ordinary labour and Sikh carpenters.

The number of civil engineers, in the Public Works Department of India, of the grades of chief, superintending, executive, and assistant, engineers, exceeds 800, exclusive of those who have been temporarily engaged on State railways, and the engineers employed by private companies. In addition to these there are upwards of 120 telegraph officers, 200 survey officers, 150 postal officers, and 100 forest officers, most of whom have experience which would enable them to qualify either as officers of telegraph, or transport, or purely engineering units of the corps.

The number of upper subordinates available as non-commissioned officers would probably nearly equal those of the officers noted above. The facilities which these officers would have for obtaining labor and materials would be of great value in war time. I have already shown that the *possible* contingencies in which the services of volunteers may be required are—

1st.—The invasion of the frontier.

2nd.—The landing of troops on the coast.

3rd.—Rebellion of the native population.

In the first contingency, the regular troops would doubtless be almost exclusively employed, but yet it might happen that small bodies of troops might unexpectedly debouch from some of the numerous unguarded passes and harass those portions of the country in which there might be only volunteers; in such a case, the engineer staff corps of volunteers might be usefully employed, in defensive operations, to arrest the advance of the invaders, until the regular troops could arrive to relieve them.

Against the second contingency—that of troops landed on the sea—

coast—it would only be necessary that those members of the “staff corps,” who might be stationed near the coast, should be in a state of preparation ; but all members of the staff corps should be prepared to meet the third contingency—that of the rising of the native population.

The country should, for volunteering purposes, be divided into districts, probably coincident with the present military commands, and the engineer staff corps should be under the orders of the commanding officer of each district.

Within these districts should be different centres, the head quarters of the different branches of the “staff corps.” The places selected for such centres should be the large towns ; and at these respective centres the members of the staff corps should assemble from time to time for drill, conference, and corps duties.

The first duty of the volunteer engineer staff corps, in case of an outbreak, would be to provide for the safety of the women and children.

At every centre, a place of rendezvous should be selected, which, in disturbed times, should be stocked with provisions, stores, ammunition, arms, disinfectants, and every thing necessary for a protracted defence. Arrangements should be made beforehand for calling in, when necessary, all the Europeans from outposts to the place of rendezvous, and the plan of defence should be carefully considered and planned beforehand, so that no time may be lost in constructing the defences, *on a well-considered plan*, and clearing the ground for action in the shortest time possible.

An admirable example of forethought of this character has been graphically described in a lecture, on the defence of Lucknow, delivered by Colonel Innes in this Institution. Had it not been for the prudent far-seeing arrangements of Sir Henry Lawrence, there is no doubt that the Residency must have fallen, and its occupants would have been ruthlessly massacred.

In a case of this kind much must depend on the promptitude of the preparations ; and arrangements should be made beforehand for immediate compliance with the requisition of the recognised officer in command in times of emergency.

At each centre there should be a well guarded dépôt belonging to the corps for the engineer equipment, arms, and stores, and a magazine to contain ammunition.

As the engineer volunteer “staff corps” at each centre would consist exclusively of a small number of commissioned and non-commissioned officers, supplemented by ordinary labour, it would be necessary to provide some means of *offence*, as well as of *defence*, and for this purpose I would suggest that wherever regular troops or volunteers are not available, the staff corps should be allied with the police, who are armed and drilled to a certain extent ; and in addition to carbines or rifles, which should be supplied to both the commissioned and non-commissioned officers, each centre should be supplied with one or more machine guns to be worked by the non-commissioned officers, who would be exercised in the drill necessary for their use. So that, with the aid of the police and a machine gun, such as the three-barrel Nordenfolt, which

weighs 56lbs., and can fire 400 shots per minute, the staff corps would be able to keep at bay a large mass of undisciplined natives. How far it may be possible to raise a militia of loyal natives in some districts, and to arrange for the co-operation of such militia with the engineer volunteer staff corps, is a question worth consideration—it is one with which my experience does not qualify me to deal, but I merely throw out the suggestion in hope of eliciting opinions upon it.

In places where torpedoes might be useful, and there is no regular body of Royal Engineers, the staff corps might be entrusted with their arrangement and use.

In the event of the landing of troops on the coast, it would be the duty of the corps to withdraw the rolling stock into the interior, or to render it unserviceable if it could not be withdrawn—to blow up the bridges and dismantle the permanent way, so as to prevent its use by the invader. If no railway should be in the neighbourhood all roads, which might facilitate the advance of the invader, should be broken up, and the bridges destroyed, and the corps should at once select some defensible post, and, entrenching it, should endeavour to hold it, and arrest the advance until regular troops could arrive to relieve them.

In order to render the officers of such a staff efficient—

1st.—Exercises should be propounded by the military authorities under assumed conditions of every possible contingency. And the officers of the corps should work out, in full detail, these exercises, giving drawings, plans, and profiles of any proposed defensive works, calculations of the labour and time required to carry them out; and, in assumed cases of the landing of troops, the report of the corps should be accompanied by maps of the district, on which may be marked all possible movements of the invader and the steps to be taken in entrenched positions to arrest progress. The position of entrenched positions should be marked on the map, and all desirable information given as to cover, or commanding positions which it might be desirable to occupy. These exercises, when worked out by the corps, should be submitted to the military authorities, who would return them with the necessary criticism.

2nd.—The officers of the corps should at once commence the study of the elementary principles of engineering, more especially those of defensive works.

3rd.—They should, after a definite time, be called upon to pass a practical examination in military engineering, and defensive operations including the formation of rifle pits, shelter trenches, hasty entrenchments, field fortifications, covers, stockades, defence of villages, obstacles, entanglements, blockhouses, batteries, redoubts, &c., &c. The previous training of an engineer would enable him quickly to master the details of these military specialities. The examination, however, should be strictly practical, and should not be calculated to burden the memory—the aim being to ensure rapid qualification rather than to making walking encyclopædias of the officers; and I should propose to allow these officers the use of the "*Aide Memoire for the use of officers of the*

Royal Engineers" in working out examination questions. It is only reasonable to suppose that they would have an opportunity of consulting such a work when carrying out the services demanded of them ; in fact it should be a *sine qua non* that every officer of the corps should possess a copy of the "*Aide Memoire*."

4th.—The officers of the corps might be usefully employed in putting into a state of defence such works, as the Government might think necessary, in anticipation of an outbreak of hostilities.

5th.—The corps should become acquainted with the size and weight of field and siege guns, so as to be able to arrange for the construction of pontoon, cask, or other temporary bridges, to facilitate the transport of artillery. They should also fully understand the direction and results of artillery fire, whether ordinary shell or shrapnel so as to provide against its effects.

6th.—They should be instructed in signalling, and a complete system of heliography should be pre-arranged, and heliographic stations agreed upon beforehand, in case of the destruction of the ordinary telegraph. Photography might also be encouraged.

7th.—Telegraph units of the corps might be established ; and the telegraph officers would be valuable as instructors in signalling. A short length of field telegraph wire with instruments would be a valuable addition to the equipment of the corps.

8th.—The officers of the corps should be instructed in the principles of military mining and counter-mining.

9th.—Each centre should be provided with dynamos for exploding, by electricity, mines or fougasses, or for demolishing bridges. And if, at any centre, power should be available in the shape of portable or other engines, an electric-light should be provided to prevent night surprises.

10th.—The corps should carefully consider the sanitary conditions of any defensible post selected, as well as the precautions to be taken against cholera or other disease ; the question of water-supply is of course of the first importance.

11th.—Ambulance classes should be formed for the members of the corps, and those whose previous experience might not have qualified them for *purely engineering* duties, might be enrolled as ambulance officers.

12th.—The great aim should be to render the corps generally useful in the shortest time possible. Utility, rather than a high standard of efficiency, should first be sought ; and higher efficiency gradually attained in course of time.

13th.—All members of the corps should go through a course of drill, though military manœuvres would not, as a rule, be required of them.

14th.—Officers and non-commissioned officers of the nearest military stations might be employed to drill the members of the corps.

15th.—An inspector-general of volunteers and deputy inspectors should be appointed who should visit the different centres, report progress, and make suggestions for the improvement and efficiency of the corps.

16th.—Periodical reviews of the corps in connection with the police might be held, and the corps might be exercised with the police from time to time so as to accustom them to work together.

17th.—The officers of the corps should make themselves acquainted with the resources of the district and keep a register of materials, such as old rails, wire for entanglements, chains, rope, blocks, crabs, timber and other stores ; together with a note of the purposes to which they might be applied.

18th.—Each centre should be supplied with a few mules for the transport of the equipment, stores, and ammunition of the corps ; and the corps should be drilled in their loading and use. These mules might be utilised in the public works in times of peace.

19th.—Not only should the corps qualify itself, but on the other hand the Military Department should have a pre-arranged system for supplying the corps with the necessary offensive and defensive appliances.

20th.—No officer of the corps, however high his rank, should be allowed to take command of regular troops.

The general aim of my proposals is the establishment, throughout India, of organised nuclei around which the loyal may rally in time of emergency ; and the utilisation of a valuable body of men who, without such organization, would be powerless to serve their country in the coming struggle.

The Government of India should give every possible inducement to volunteers to join such a movement, whether by lessening the necessary expenses of volunteering, or by affording time and opportunity for qualification, or by the grant of travelling allowance when attending corps meetings, or by other concessions suggested by Majors Collin and Dodd, and by Captain Begbie.*

No doubt great difficulties are involved in the proposals which I have sketched out ; but difficulties should serve to Englishmen as incentives to exertion, not as excuses for inaction.

The whole history of British rule and progress in India describes one series of victories over apparent impossibilities ; but the long era of prosperity in England has encouraged the fungoid growth of an “anti-patriotic bias” ; and I fear that nothing short of a disastrous war will clear it away, and bring the English people to their senses. That we shall before long have a struggle for existence in India, there can be but little doubt ; but I have no fear of the result, if the English people will be true to themselves.

It would, however, be the height of folly if we were to disregard the warnings looming in the horizon ; if, instead of straining every nerve to be prepared, we were to sit with folded hands, trusting to chance to extricate ourselves from the difficulties in which apathy and anti-patriotism have involved us.

Captain Trotter in his Prize Essay of 1881 pertinently remarks, of modern warfare, that “ its distinguishing features, the suddenness of its origin, the swiftness of its accomplishment, the decisiveness of its results, all contribute to make it impossible that any one can take a useful part in it who has not a clearly defined place to step into at a moment's notice. Are we to conclude then that there is at the present day no opening for the display of patriotism and public spirit by the

* See Journal of the United Service Institution of India, Vol. XII, No. 58, 1883.

people of this country? Surely not: modern war has only brought about this difference, that the time for such display is now, *not during war, but during peace*. In the place of the excitement generated by the presence of some great national crisis, the propelling motives must in future be *prudence, forethought, and a more far-seeing patriotism*.

Mr. Molesworth was loudly applauded at the conclusion of his lecture, which had been listened to with marked attention throughout. There had been frequent outbursts of applause in connection with the allusions to the patriotism of the nation. Sir Donald Stewart as Chairman invited discussion.

Colonel Chesney said Mr. Molesworth had sketched the different classes of danger in which engineer volunteers might be useful; and one of these was danger from an enemy crossing the frontiers, it being urged that members of the corps could hold a position until the arrival of the regular troops. He (Colonel Chesney) did not see how this would be likely to occur; but however that might be, there would, in case of war, be a large sphere of usefulness for engineer volunteers at the front. In our wars of the future, success would lie with those who had at their command good lines of railway. If a campaign had to be made across the frontier, the number of Royal Engineers in India would not be equal to the work of rapid railway extension, and yet such extensions would have to be made if the army in the field was to be properly furnished with supplies. Under such conditions the services of engineer volunteers would be absolutely necessary. (Hear, hear.) As to the general necessity of engineer volunteers, Mr. Molesworth had fully made out his case. There were cavalry, artillery and infantry volunteers in India, but no engineers. This state of things should be remedied. As a large proportion of volunteers were supplied from the railways, the rank-and-file being skilled artizans and machinists, the existing bodies of railway volunteers could obviously furnish the elements for engineer volunteer corps or companies. He would not transform all the railway corps into engineers, but would turn one or two companies only into Sappers in each case, allowing them still to remain attached to the original corps. He was a little afraid the proposed Staff Corps system would not work in India, as the conditions were very different from those which obtained at home. In England the officers were men who had great control over the labour market and could always get navvies and others loyally to work under them. In India a corps of officers with no men would not be of the same value as a similar corps at home. The defence of Lucknow had been quoted by Mr. Molesworth, but it should be remembered that among the 800 European compatriots there, only three were engineers. If all had been engineers he doubted if the defence would have been so usefully conducted as it was. The corps to be efficient should have a proper proportion of officers and privates. Mr. Molesworth had suggested that the police might be utilised, but he had left no place in his scheme for that important person, the Magistrate of the District, and yet *he* must be considered; with these reservations he thought the proposal

to raise Volunteer Engineer corps an admirable one, and all military men present should be grateful to Mr. Molesworth for having put the matter so clearly before them. (Hear, hear.)

Mr. Molesworth in reply said he quite agreed with Colonel Chesney that a corps composed entirely of officers would not be as useful as the Staff Corps at home. He did not desire to exclude the rank-and-file, and wherever there were people fit to join he would welcome them; but the difficulty was that in many places there were but a few Europeans. The great object was to have some organisation by which engineering talent could be used in an emergency: every man knowing what he was expected to do. He suggested co-operation with the police as being the most practical idea of getting rank-and-file in case of a rising.

Sir Donald Stewart asked the meeting to record Mr. Molesworth a vote of thanks for his highly interesting and valuable lecture, though the forbidden domain of politics had been somewhat trenched upon. He did not know whether the allusions to England cancelling war preparations at the first gleam of peace were intended to apply to the present crisis; but if they were he could only say it was quite erroneous to suppose that the Government of India had stopped their new railways, broken up their transport, and sold their stores. He did not think it would be proper to say much regarding Mr. Molesworth's proposals, as they would probably come before him departmentally; but the lecturer certainly deserved the heartiest thanks of all present for the admirable way in which he had put his scheme forward. (Hear, hear.)

The vote of thanks was accorded *nem. con.*, Mr. Molesworth explaining that his allusion to cancelling preparations had a general and not a local meaning.

Wednesday, 23rd September 1885.

MAJOR-GENERAL J. WATSON, V.C., C.B., in the Chair.

THE OFFICERING OF OUR NATIVE REGIMENTS WITH A VIEW TO THEIR PREPARATION TO MEET AN EUROPEAN ENEMY.

By MAJOR G. F. YOUNG, Assistant Quarter-Master General.

BEFORE commencing this paper, I would wish to apologise for offering any opinions at all about the native army in the presence of an officer* who has known that army intimately for no less than 48 years.

The time has now come when it seems necessary to prepare our native troops for meeting European enemies in battle, and thus for a far severer trial to their firmness and their courage than any they have yet had to face.

It has been said that moral force is to physical as three to one. The British soldier when he meets the Russian soldier in battle has the traditions of numberless victories over European enemies to give him confidence, and more especially of Alma, of Balaclava, and of Inkermann, all gained by British soldiers over the same or similar foes.

But the sepoy must go into the fight bare of all this, and relying solely on his own stout heart, and—his *English leader*.

Moreover on the result of that first fight will largely depend the sepoy's morale, as regards later ones. If after the first fight he feels that he and his English brother, Thomas Atkins, can beat that terrible Russian of whom he has heard all his countrymen speak with bated breath ever since he was born, then all will be right : but if the reverse, how then.

The English soldier's courage is not dashed by one defeat ; if beaten to-day he will be only the more doggedly determined to turn the tables on the enemy to-morrow ; but will the *sepoy*, if defeated at this first fight by an enemy who has always been represented in his village as something terrible, and whom many of his people believe a more powerful nation than the English, will he be brought to the scratch again ; or, if he is, will he be so with that firm confidence of victory which is the only guarantee of obtaining it ?

It cannot, therefore, but be an anxious moment for the General in command, whoever he may be,—aye, and for the Government of India also,—when our native regiments find themselves for the first time face to face with Russian ones. How they will bear themselves in that fight is

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wrapped entirely in obscurity ; no man living has any experience to tell him ; the old fights against French troops a hundred years ago were under too different conditions to be any guide ; and all can be only speculation, based upon how they have borne themselves against Asiatic enemies and how their fathers bore themselves against ours.

Still, though all is uncertain, I imagine no officers of, at all events, Punjab or Goorkha regiments, have any fear as to how our sepoy soldiers will bear this trial, *provided only that by being properly equipped for it they are given a perfectly fair chance.*

Nott, in 1842 at Kandahar, wrote enthusiastically of his "splendid regiments" of Native Infantry, and surely we may apply no less praise to our splendid Punjab and Goorkha regiments of these days. It is sufficient to point to the behaviour of the 2nd Sikhs and 3rd Goorkhas at Ahmed Khel, or lately again of the 15th Sikhs (and though this paper is intended to refer to the Bengal army alone, I may add of the 28th Bombay Native Infantry also) at Baker's zareeba, to show what they *are*, while we can all see what they look like.

But still such deeds were not against Europeans or breechloaders, and it will be the height of folly to put these men to a severer trial than we would dream of applying to our British soldiers, or in fact to omit *anything* which may lessen its severity.

We are preparing to take them for the first time against an untried enemy ; all their traditions as well as their experiences make them regard an European as a man who can beat them in a fight ; while, added to this, the constant fresh conquests of the Russians cause perhaps all their own people to believe that the former are the stronger.

They being thus already handicapped, let nothing be left undone which can serve to give them in all other ways confidence, and a thoroughly fair chance of doing their best in what must anyhow be a formidable trial. To do otherwise will be both a cruel injustice to *their* race, and a most short-sighted policy for our own.

If they are properly fitted out at all points for the great struggle into which we take them, these men will most ungrudgingly shed their blood for England's and India's joint cause ; but if from any motives of "*economy*" (?) we do not so equip them ; if we take them into such a contest only half equipped for it, and thus place them at a cruel disadvantage compared both with the enemy in their front and with their British comrades at their side, then we richly deserve (though happily it is unlikely even then) that they should turn against such a nation as ourselves, and offer their services to our adversaries.

What then we ask—and surely in view of all the above considerations it cannot be thought too much to ask—is that such of our native soldiers as are to be used in such a contest shall not there find themselves in any way thus at a disadvantage ; that they shall in fact be, in all essentials, as well armed, as well clothed, as well fed, and *as well led* as the British soldiers with whom they are brigaded.

In such a matter let not our ears be made to tingle with the cry of "it will cost too much."

Weighed against the issues at stake it simply *could not cost* "too

much." And if India either cannot, or will not, afford to equip the soldiers of her own nationality, when they are going into a struggle for her very existence, in the manner which will best ensure their winning her victory, then she does not deserve anything better than defeat, and to be trodden under the foot of a most merciless conqueror.

The important questions of arming, clothing, and feeding need not be entered into here: as regards the two first a great deal has lately been done, and is still being done, to equip our native soldiers well in these respects; while, as regards food, I would only say that I think it absolutely essential that our Punjab and Goorkha regiments, who are all meat-eaters when in hard work, should, when on service in such countries as Afghanistan, have a small daily meat ration and once a week also one of tea. These will keep many a man out of hospital.

Conveniently enough the meat they prefer is goat's flesh, and the goat appears about the only animal which can exist comfortably in such places, while it will follow an army anywhere.

I may add that if *all* soldiers on service were systematically given as much as ever they can eat, the advantage would still be all on the side of the State.

Far more important, however, than even arming, clothing, and feeding, seems to me this question of their leaders. By these I mean the *immediate* leaders, those of the squadrons and companies, on whom in reality depends the behaviour almost entirely of all troops whatever their nationality.

I would wish, therefore, to lay the greatest stress upon the fact that the most vital point of all such preparation to meet European enemies is the leading of the Infantry fighting unit, *the Company*, by European officers; and to advocate, as strongly as any weak words of mine can advocate, that a certain number of our native regiments (those who are to be placed in the first line and brigaded with our British troops) should be made "Regular" regiments, having their companies commanded by British officers only, each company having two British officers and no native officers; and on this latter point I would ask any one inclined to think that native officers should be retained even in such regiments, to reserve his judgment until he hears what I have to say about it.

In advocating this change I refer entirely to the Infantry branch of the service, and for the following reasons; and I trust sincerely that in giving those reasons, nothing that I must needs say in order to urge fully the vital importance of this measure to the Infantry arm, may be allowed to wound the feelings, in any way, of my comrades of the other arms.

A great military writer, speaking of the respective "rôles" in battle of the three arms, has said of Infantry that "on it must fall the brunt of the battle," and this is of course universally acknowledged.

Seeing that every soldier is honored solely in recognition of the fact that he is a man who gets killed for the sake of his civilian countrymen, it would appear that that branch of the profession which gets most

killed should get most honor, and so that Infantry should be given "the right of the line" and the handsomest uniform ; especially as it is probable that the more honor any body of men get, the more likely are they to prove worthy of it under trial.

Setting aside, however, empty honor, and even the fact that it is to be ready to be most killed, Infantry in action requires a different class of courage to Cavalry, and it is, therefore, the more necessary to look carefully to its leading. The wild excitement of a Cavalry charge, and the personal contact with enemies, would rouse any man to acquit himself well, but the style of fighting required in these days from Infantry is a very different matter. It was otherwise when Infantry like Cavalry did most of its fighting hand to hand, but now-a-days Infantry receives little or none of that extraneous assistance derived from the excitement of a Cavalry charge, but requires just that sort of cool and *steadfast* courage which it is most difficult for men to acquire, but which has always been the apparently inborn, and at all events peculiar, attribute of the Englishman, no matter what profession, branch, or class of society he belongs to. It was this particular characteristic of our British *Infantry* which in our old wars always roused the chief admiration of foreign military critics, not excepting a man who certainly hated the nation most heartily—the great Napoleon.

But besides the quality of courage required from Infantry in battle, there is another very important reason why this change is only required by our Native Infantry and not by our Native Cavalry, *viz.*, that, while the fighting unit of Infantry is, and must always be, the *Company*, that of Cavalry is, not the Troop, but the *Squadron*, and these are already led by British officers.

It is here worth noting that a Native Cavalry Regiment with a total strength of 537 sabres* has eight British officers, the recent augmentation. or about one to every 67 sabres, while a Native Infantry Regiment with 816 bayonets has only the same number, or about one to every 102 bayonets. Moreover Cavalry fights in close order, but Infantry, as a rule, extended, which would seem to imply more officers for a similar number of men.

Thus the arm which on all grounds would seem to require the larger proportion of British officers has considerably the fewest ; while those which it has, are not, as in the Cavalry, placed in command of its fighting units.

As then our Native Cavalry have already their two British officers per *Squadron*, we may dismiss that arm from the discussion, and consider only the question of giving our Native Infantry two British officers per *Company*.

In the days when our Native Infantry performed its greatest deeds—deeds some of them unsurpassed by *any* troops in the world—during all that long half century of almost incessant fighting in India from 1796 to 1849, the *Company* of sepoys was led by a British officer.

Sepoys so commanded helped, and helped largely, to storm Seringapatam against Hyder's best Mysore soldiery, to win Assaye against

overwhelming numbers of born soldiers like the Mahrattas, to beat the stubborn Goorkhas on their own mountains, and to conquer the greater part of India against enormous odds, and enemies at least as brave and warlike as themselves.

It was so commanded that sepoys managed to beat the fierce and warlike Afghans (though better armed than themselves) in every fight from 1838 until the disastrous retreat from Kabul in 1841; it was so commanded that sepoys fought successfully at Meeanee against Belooches numbering 10 to 1; and lastly it was so commanded that sepoys fought so stoutly against Sikhs, trained under French officers, at Ferozeshah, at Sobraon and at Chillianwala.

And let it not be forgotten what sort of fights these, and many more which there is no time here even to mention, were; none that Englishmen of our generation have seen in any part of the world can be compared to them; and for a parallel in the losses on both sides we must go to Continental battles fought with breechloaders.

And be it remembered that these things were done, not by the hardy and warlike races whom to-day we put into our first line, the Sikh, the Goorkha, and the Pathan, but by the plain Madras, or Hindustani sepoy, and moreover *against those very races*.

Far be it from me, indeed, to run down, or depreciate the glory won by our present regiments since those days—this we all glory in; but I assert most positively that *nothing* could be finer than many of those deeds of the older army, and that they have never been surpassed, many never yet equalled, by our present regiments.

Who then, thinking over these things, can doubt that the one cause above all which produced such results was the fact that our fighting units, the companies, were led by British officers.

I cannot but think that many of the deeds of that time would have been simply impossible otherwise.

And modern war makes the company a ten times more independent unit than in those days,

Finally, I would ask, had for instance every company of the Sikh army at Ferozeshah (the greatest battle we have ever—yet—had to fight in India) been commanded by an European officer, or had ours *not* been so, should we or they have won? I think there will be very little doubt among those who know the details of that battle, that this one item would just have made the difference between glorious victory and crushing defeat.

A severer contest even than Ferozeshah is probably in store for our native regiments in the near future, and one where the other side will *not* labor under the same disadvantage in this respect as the Sikhs did.

If then it be true that British leaders of companies were such a vital ingredient of success against Asiatic enemies, often very imperfectly armed, how much more will it not be so against European ones, and these armed with breechloaders?

And if such results were obtainable thereby from Hindustani sepoys, how much more should not be obtainable from more warlike races?

In thus urging the necessity for British company leaders in action do not let me be misunderstood for a moment as regards the native officer.

No doubt native officers have often many failings, but they have many excellent points too; and I wish it to be distinctly understood that, though advocating that in a certain number of regiments the companies should be entirely left to British officers, I yield to no one in appreciation of our native officers.

I respect and like those of the right stamp as much as any one; I acknowledge to the full their efficiency; I thoroughly admit their sagacity and resource on detached commands; and also their power of exercising responsibility satisfactorily when accustomed thereto. And though all may not be all this, still all may in time be made so.

But all this does not touch the real point. For this is simply that the reasons for objecting to the native officer as a company leader in action in those regiments which are to be placed in what may be called our first line, *do not lie in the faults, few or many, of the native officer who is to command, but in the character of the sepoy who is to be commanded.*

Be the native officer ever so capable, ever so zealous, ever so trustworthy, ever so plucky, *the sepoy does not believe in him*; nor will he attempt, under a native officer, feats which he will both attempt and succeed in under a British one.

No officer who knows sepoys will deny this, and no amount of excellence to which the native officer may attain will affect it. Its roots lie buried deep in the national characters of the two races. The native soldier's belief in his English officer has not yet, thank Heaven, been undermined by theories, so fashionable now-a-days, as to an Englishman being quite an ordinary animal, and not at all superior to a native of India, and it is to be hoped that India's great struggle may come off before those theories have had time to work their natural results with the classes from whom our sepoys and sowars are drawn.

The sepoy at all events places reliance on his English officer; he does not place it on men of his own race; and doubly and trebly does he not do so when they are of no better family than himself. An European he will follow to danger and to death; or if opposed to him in battle, will give way before him, unless led also by an European; the man of his own race he neither fears as a foe, nor believes in as a leader.

This is, in fact, the way that we won India; this is the way that we hold it; *and this is the way, alone, that we shall defend it.*

Of course I do not mean by this that our sole reliance for such defence is to be on our native troops; but what I do mean is that this change *must* be made if those troops are to take any part in such defence, or to be anything else than an anxiety and encumbrance to the British Regiments with whom they are brigaded.

Unless they are to be made thoroughly capable (as they will be if thus equipped for it) to bear their *full* share of the burden, the

British portion of the force will do much better without them altogether. It is a terrible strain indeed on any Infantry to stand firm when other Infantry in the brigade are breaking, and even though British Infantry may be able to stand such a strain the broken portion of the brigade may so mob and crowd the rest that all its efforts may be useless. Many instances of this will occur to every one.

Therefore, if British Company leaders will render any such breaking in the very least less likely to take place, we are bound, in the interests of India, in the interests of England, at any cost, and disregarding all other considerations, to have them.

So far, then, as to the necessity for British company commanders *in the field*.

But I argue that this is equally necessary in quarters also; that in fact the direct and sole command in quarters is necessary in order to get the full power in the field.

In thus advocating having no native officers in these particular regiments, for what is called forming a "link" with the men in quarters, I shall no doubt have the opinions of many experienced officers of native Infantry opposed to me, some from real conviction after a full consideration of all the bearings of this difficult question, but more merely because the idea is strange and opposed to what they have been accustomed to for years. And it may very probably be said that we *have* this urgently necessary British leading already, and that all that is wanted is more of it, the same organization being continued.

To this I reply that, even if the present *number* of British officers were *doubled* to meet the casualties which will be caused by breechloaders, still the *organization* remains totally against such leading.

The casual supercession, for a few hours during an action, of the regular company commander, by a British officer, who perhaps has never even spoken to one-half the men of that Company (except perhaps to find fault with them on parade) is a totally different thing in every way from the permanent Company command I advocate, and from their being led and encouraged in the fight by an officer who has been their sole guide and instructor, and who has had to pay them, clothe them, and see to all their wants and comfort generally, ever since they joined the regiment as ignorant recruits, and to whom in fact they feel that they owe nearly everything.

Let the number of British officers be what it may, yet surely if you want to get the most out of men it cannot be a good arrangement that they should be commanded by one set of men in action, and by a totally different set on all other occasions. Such a principle is opposed to all military experience of every age, as well as to human nature.

How many officers, for instance, suddenly taking command in this way of a company in action could at present speak to individual men of it by name?

I maintain then that by adopting, in the selected regiments, the system of command which is found necessary in all other armies, a British officer commanding Native soldiers, will be able to establish a power over and knowledge of his men, such as is utterly impossible

under any other system, such as we have never seen yet, and such as is absolutely indispensable if he is to lead them with success against enemies armed with breechloaders, and Europeans to boot.

The idea that a native officer is necessary as a "link" between the British officer and the sepoy is, I believe, a fallacy—at all events so far as the Punjab sepoy is concerned, and a relic of a different state of things altogether; while it seems to me even doubtful, from the lessons of the mutiny, whether this so called "link" (which I would rather call a "veil") was an advantage even with the Hindustani sepoy of the older dispensation.

An ordinary English gentleman who will take the trouble to understand their language thoroughly, who will set himself to learn their history, their traditions, their customs, and their ways of thought, and who will at the same time exercise temper, tact, and patience, and *will have no favoritism*, will in a very few months know a great deal more about them than any native officer will ever tell him, and if he is thrown with them daily in the way a company commander alone is, will be able to give points to any native officer both in knowledge and management of his men.

Of course such officers would naturally be much more with their men than is possible, or even desirable, at present.

I maintain then that a British company commander who will do and be all this to his men, would be able to do almost anything with, at all events, the Punjab sepoy, and plenty of examples to prove this ought to occur to any one who knows them. These men, with whom an Englishman always feels that he has so much more in common than he has with other races in India, have never yet had their full chances in this respect. Give it them, and you will then for the first time see what Punjab regiments can become; all that they have been is nothing to what they will be.

But to do this we must have them to ourselves, without any native officers intervening. Over and over again have I felt (and many others must have felt the same) that the native officer stood like an impenetrable wall between me and the men. Only now and then, out shooting perhaps with one or two, does one get any insight into their real characters and ways of thought; once in presence of, or near, a native officer, the sepoy becomes a thing of wood, and without an idea other than what he knows his native officer intends him to have. And the native officer, as a rule, prefers he should be blind, and deaf, and dumb!

From a consideration of the whole of the above it seems unanswerable that (whatever difficulties there may be in carrying it out), if the Native Infantry fighting unit, the company, is to be led in action by a British officer, it must be commanded by him, and by no other man, in quarters also.

But it may be said that the company need *not* be the fighting unit; that we may substitute for this the double-company, and give a British officer to each, with perhaps a total of ten British officers per regiment.

To any such proposal I can only say—*first*, that in my humble opinion, whatever may be done with the drill book, *the company always must and always will remain the real fighting unit of Infantry*; especially as it has stood the test of a hundred years' campaigns, while the double-company is an untried and modern invention which I cannot think will ever take its place, convenient as the latter is for many other purposes.

Secondly, the real leader in action, as there is overwhelming evidence to show, must be the British officer, and as a double-company in a regiment 1,000 strong would number 250 men, this would be too large a number for one officer to lead in the manner contemplated. The case of the German companies does not apply here, not only because our sepoys are not German soldiers, but also because their companies are not limited to that one solitary leader, but have subordinate officers (of the same nationality with him) to lead smaller bodies.

Thirdly.—A British officer commanding a double-company would entirely lose that to which I attach so great an importance, *viz.*, the power over men obtained by the company command in quarters; for the companies would continue to be commanded by native officers, and the British officer's position regarding them would remain no better than now.

Lastly.—The number of British officers would still remain (as now) utterly inadequate for the purpose; for in meeting breech-loaders a native regiment must be prepared to lose British officers largely, and ten leaders among 1,000 men can spare no casualties.

Moreover, no proposal to send into a regiment just going on service a large proportion of officers from another regiment not going, will work well; so that the ten officers could not be satisfactorily increased by this means.

The objections which may be brought against this proposal may perhaps be summarised thus:

- (1). That in the field we have already got British leaders.
- (2). That in quarters having no native officers will deprive a Commanding Officer of a certain "hold" over his men which he now possesses, or thinks he possesses, through them.
- (3). That energy and zeal in the ranks will be destroyed by prospects of promotion to native officers being closed.

No. 1, I have already fully answered above; we have neither the number, nor the organization, for it.

As regard No. 2, I have shown above that I believe the "hold" will be greater and not less. I believe Commanding Officers have said that if they had no native officer they would "never know what was going on in the lines." I simply cannot understand such an opinion. Doubtless under the present system they hear all the backbiting, and petty malice, &c., in which the native officers are concerned; but it is most probable that they are allowed to hear little else, while even granted this is not so, still, with the British officers in direct and sole command of the companies, the closer association which must at once ensue in

conducting all the daily affairs of a company, will cause quite as much to be known about the men, if not a good deal more, than is now known through the native officers, and to much better effect.

As regards No. 3, I will only say here that I do *not* propose to close all outlet for energy, capacity, and a proper ambition in the ranks; on the contrary I propose to give these a much wider field than they have now. How this is to be done will be noticed later on.

I now come to the constitution, &c., of the proposed Regular Battalions.

Such a battalion should, I propose, consist of about 1,000 men, divided into six companies of 150 privates each, with a Captain and a Subaltern to each such company.

Its composition would be :—

Officers.

- 1 Lieutenant-Colonel, Commanding (with staff pay as now).
- 1 Major, 2nd in command (with staff of Rs. 300).
- 6 Captains, commanding companies (with staff of Rs. 200).
- 7 Lieutenants, (with staff of Rs. 100).

Total ... 15 British Officers.

One of the Lieutenants to be Adjutant, with an extra Staff allowance of Rs. 100.

Another to be Quarter Master with an extra Rs. 50.

Native Ranks.

- 1 Havildar Major.
- 1 Quarter Master Havildar.
- 48 Havildars (8 per company).
- 48 Naicks (8 per company).
- 18 Drummers (3 per company).
- 900 Sepoys (150 per company).

Total ... 1,016 * All ranks.

On parade or in action Captains and Subalterns would of course be on foot, but on the line of march, convoy duty, outpost and reconnoitring duties, &c., they would be mounted. It seems scarcely necessary to have for parade purposes a "junior-major," but as some old movements in the drill book still require this arrangement, the Senior Captain could always, if necessary, be mounted on parade, his Subaltern taking charge of his company. In action, however, there should be no nonsense of this sort, and all commands should there be direct from the Commanding Officer to his Captains of companies.

As regards the size of the above companies. On service compa-

* NOTE.—It is a curious coincidence that this just makes exactly the same proportion of British Officers to bayonets as the Cavalry arm has at present (*vide* para. 10), *vis.*, 15 to 996 = 1 to every 67 bayonets.

nies dwindle to half companies and half companies to sections, and the present company of 90 privates is there generally 50 or 60 only effective. I am certain, therefore, that a strength on paper of 150 men will not be found one bit too large.

On service, what with recruits at the dépôt (say $\frac{1}{10}$); men in hospital or invalided ($\frac{1}{10}$); on duty in camp, or with the baggage on the march ($\frac{1}{10}$); employed men, detached men, and men short of strength ($\frac{1}{10}$); not less than $\frac{1}{6}$ or $\frac{2}{3}$ will always be away somewhere, so that there will never be more than about 90 * out of the 150 present at one time and place together; and about 45 files is not too much for a Captain's command.

As regards the Lieutenants there will be, omitting the Adjutant, a Lieutenant to each Company, the Quarter Master being posted to one like the rest.

As regards the Havildars, these will have of course a great deal more power and influence than they have in existing regiments; and I also propose considerable improvements in their pay.

I propose that there should be an appointment similar to that of Sergeant-Major in a British regiment to be called Havildar-Major and to be the head of the regiment below the British officers.

Also that there should be an appointment of Quarter Master Havildar, the want of which is very great both in quarters and on service.

Also that the pay of all Havildars Staff appointments, (Pay, Color, and Drill) shall be *doubled*; that of Pay Havildar especially being too little remunerated at present for the responsibility incurred and work done.

Also that the pay of all Havildars shall be increased from Rs. 14 to Rs. 15, there being now too little difference between theirs and that of the Naicks.

The proposed pay for Havildars will therefore be :

RANK.			At present.	Proposed rank pay.	Proposed staff pay.	Total proposed.
			Rs.	Rs.	Rs.	Rs.
Havildar-Major	...	...	...	18	12	30
Quarter Master Havildar	...	...	...	16	10	26
Havildar	...	...	14	15	...	15
Pay Havildar	...	...	14 + 5	15	10	25
Drill Havildar	...	...	14 + 5	15	10	25
Color Havildar	...	...	14 + 2	15	5	20

* NOTE.—I find that the average of ten Native Regiments in Cabul in June 1880, gives the strength (effective) of each company at 60 sepoy, and from this of course would have to be deducted men on duty, &c., so that probably no company could have put more than 55 men on parade, out of the present strength on paper of 90.

And I propose that there shall be in each company, instead of five of each grade as now, eight Havildars, eight Naicks, and eight Lance Naicks, or two of each rank per section. Also that each Pay Havildar shall in future have a Naick as his assistant.

These arrangements will of course very considerably improve the position and pay of the Havildar's grade in these regiments.

I have said that I think these regiments would be so invaluable that the question of cost ought not to be considered at all in the matter.

Still it is, I suppose, necessary that I should show what that cost will be. Before doing so I would, however, ask anyone inclined to be biassed by the idea of cost to first try and calculate, if he can, *what one defeat costs*.

The staff pay of the officers has been stated above. I don't think the Subalterns ought to receive less than now, *viz.*, Rs. 100. The Captains of the new companies will be the backbone of the whole machine, and should be well paid; I therefore do not think they should receive less than Rs. 200 a month.

The Adjutant and Quarter Master should each receive the same pay as now.

The staff pay of the 2nd in command has been increased by Rs. 30 a month, *viz.*, to Rs. 300, to adjust his pay better in proportion to that of the Captains of companies. A company allowance for the repair of arms has been allotted to each company of Rs. 35 a month, being in exactly the same proportion as the present Wing allowance for this purpose.

The Adjutant's office allowance has been left as now; but an office allowance has been added for the Quarter Master of Rs. 35 a month.

It is unfair both to this officer and to a regiment not to allow him an office allowance; besides all his other important work the Quarter Master of a native regiment has charge of all the funds of a regiment, including hutting, clothing, and other regimental funds of every sort; his office has to supply nearly as many returns, and if he does his work properly will have to do nearly as much writing altogether as the Adjutant. Yet now he has out of his staff pay to meet office charges, etc., which bring his pay down to scarcely at all more than that of a Wing officer. The practical result is that the appointment, on the efficient working of which the comfort and health of a regiment depend more than on any other single officer, is worthless and not wanted by any one.

The above arrangements as to the staff pay of the officers will considerably improve the prospects of officers entering this branch of the service, and will enable it again to compete for good Subalterns on more even terms with the sister branch, the Cavalry, than it does now, which of course it is most necessary it should do. At present many Subalterns with Native Infantry Regiments are only putting in their time there until they can get away to the Cavalry, while others are more or less infected with the same silly disease, and would do so too if they could. Thus the Cavalry branch has at present exactly

the same baneful effect (as far at all events as the younger officers are concerned) on the Infantry which Civil employ had before the mutiny; this is all wrong, and it will be still further increased by the recent augmentation and rapid promotion to Squadron commands in the Cavalry branch.

The cost of officers and non-commissioned officers (which are the only ranks affected by the change) in the proposed regular battalion (strength 1,016) will therefore be as shown in *Table A*; and amounts, including all the increases of pay and staff allowances, to Rs. 9,985 a month.

The cost of the same in an existing regiment (strength 816) is shown in *Table B*; it amounts to Rs. 8,354; being a difference of Rs. 1,631; but this may be further reduced, in comparing the two, by Rs. 272, being the pay for actual increase of non-commissioned officers owing to the greater strength; so that the real difference is less than Rs. 1,400 a month.

With the present organization it is hard to tell the exact cost of a regiment as it varies with the army rank of the British officers; I have, therefore, taken my own. It might be objected that we are too senior a lot for a fair average, but on the other hand if existing regiments were raised to the same strength, *viz.*, 1,016, either one, or two, more British officers would have to be added, and this would more than counterbalance any excess on the above account.

The result then is that this great gain in the fighting power of the country can be got (including all increases of pay) for such a comparatively paltry increase on present expenditure as about Rs. 1,400 a month per regiment so equipped, *even supposing nothing better is attempted than the equipping of a certain number of distinct regiments in this manner* (but see Part II.)

PART II.

I now come to the second part of my subject.

I have shown that this great gain can be obtained for only about Rs. 1,400 a month per regiment.

But what if it can be shown that it is obtainable for nothing at all? And more, what if together with it arrangements long desired, for feeding a battalion on field service by a sister battalion at home can be advantageously and effectively combined? Yet this can be done.

I propose then that paired, as a 2nd battalion, with each such regular battalion as I have suggested, there shall be a regiment of the present organization; the latter to be looked on ordinarily as the home or depôt Battalion, but to be fit in every way, as now, for service in *India*, and only not intended for meeting an European enemy. These two together to form 1st and 2nd battalions of one complete regiment.

I do not propose to alter the organisation of the 2nd battalions in any way from that which the regiments concerned now have, except in two unimportant particulars, *viz.* :—

- (a). To reduce the number of companies from 8 to 6, so as to correspond with the number in the 1st battalion (para. 40.)
- (b). To reduce the British officers from 8 to 5 by sending three of its five Wing officers to the 1st battalion; the proper place of these officers is the field battalion where they are wanted, and not with the home battalion where there is no proper work for them; a Commandant, two Wing Commanders, an Adjutant and Quarter Master are ample to work any Native Regiment in Cantonments.

The reduction in the number of companies need not of course affect the strength of the regiment; this would solely depend on the intentions of Government as to increasing the strength of the native army or not. Two existing regiments have between them $720 \times 2 = 1,440$ privates. If 900 of these are taken by the 1st battalion it leaves only 540 for the 2nd battalion. If, therefore, Government desired no increase to the army, the 2nd battalion could consist of six Companies of 90 privates each, making 540 in all. If, on the other hand, Government desired to make an increase, then these 2nd battalions might consist of six companies of 120 privates each, making 720 (as now) for the battalion. This would be an increase of 180 men for each double-battalion regiment, and, supposing there are thirty such regiments formed, of 5,400 men for the whole Bengal army.

I have taken the latter supposition. For the reasons given in para. 28 a strength per Company of 120 privates will not be a bit too great even in peace.

Thus every Double-Battalion Regiment would consist of—

	15 British Officers.
1st Battalion.	98 Non-Commissioned Officers.
	18 Drummers.
	900 Sepoys (in six Companies).
	5 British Officers.
2nd Battalion.	12 Native Officers.
	60 Non-Commissioned Officers.
	16 Drummers.
	720 Sepoys (in six Companies).

The pay and position of the Non-Commissioned Officers of the 1st battalion will be very much better than that of those of the 2nd battalion, and I think it is a question whether that of the sepoy ought not to be so too.

The 1st battalion will thus be a battalion permanently maintained at full war strength, always ready at any moment to take the field at a strength of 1,016, without having its ranks filled at that critical time with any fresh men or fresh officers. It will be able to cease all recruiting operations the moment it is ordered on service; and it will not be reduced to form any dépôt.

The 2nd battalion will receive all increase caused by the calling out of reserves; and on it will fall the responsibility, as soon as the 1st battalion takes the field, of keeping the latter fully supplied with trained men.

The 2nd battalion will, at the same time, be perfectly fit (as now) for any service in India or against native enemies. While, should it ever become necessary to use such 2nd battalion also against an European enemy, all that it requires is 180 men from the reserves, and the necessary British officers (five Captains and five Lieutenants).

The "rôle," therefore, of these 2nd battalions is 1) keeping the peace in India, and (2) feeding the 1st battalion, when the latter is on service with trained men.

I think it would be an excellent arrangement which would have the very best results, to give every sepoy in the 1st battalion an increase over those in the 2nd battalion of Re. 1 a month; and the balance shown at foot of Table D shows that this also can be done with practically no increased expense to Government.

In Table C I have shown, in column (1), the British officers of two average regiments of the present organisation, and alongside them, in column (2), those required for the two battalions of the proposed regiment. In bracketing the present regiments in pairs for 1st and 2nd battalions it would seldom be that both regiments would contain an unusual preponderance of senior officers, and I have therefore taken an average.

I find from the Army List that in nearly every regiment the Commandant is a full Colonel; I have therefore supposed this to be so in both regiments of column (1). I also find that in about half, the 2nd in Command is a Lieutenant-Colonel; I have therefore supposed one regiment to have Lieutenant-Colonel and the other a Major.

In 26 regiments out of 40 I find the Wing Commander is a Major; I have therefore supposed this officer to be so in both regiment.

The rank of the Wing officers has in the same way been taken on the average given by the Army List.

An examination therefore of this Table C shows that to convert the two existing regiments of column (1) into the two proposed battalions of column (2) presents little difficulty; all that is necessary is as follows:—

- (a) Of the two full Colonels, one must, if possible, be got rid of; I shall state presently how I think this might be done.
- (b) The three Captains of the 2nd Regiment must be sent to the 1st Battalion to command Companies, and the two senior Lieutenants of the six must be promoted for the same purpose.
- (c) This completes both battalions as far as Field Officers and Captains go. There will then remain four Lieutenants as against nine required; this means vacancies for five fresh Subalterns from British regiments.
- (d) It will also be necessary to absorb (gradually) the excess of native officers over those wanted for the 2nd battalion. Probably a good many of these would be glad to take pensions at once instead of waiting longer for them; for a few others positions might be found in the Police or the Reserve; and for others again in the Irregular regiments suggested in Part III.

- (c) It will also be necessary to send 180 men from the 2nd battalion to complete the 1st battalion, together with nine Havildars and nine Naicks.

There is, of course, a slightly larger preponderance of senior officers in the 2nd battalion than in the 1st battalion, but I do not see that this would be any harm, though, of course, if it were possible, it would be better that the Commandant should in the former also be a Lieutenant-Colonel. But first the object is to alter existing regiments as little as possible, and secondly, the senior officers must go *somewhere*.

Probably in a double-battalion regiment of this sort, both as regards men and officers, the younger and more adventurous spirits will naturally gravitate to the 1st battalion, while those of an opposite tendency, those with large families, or in fact all whom, from one cause or another, a quieter life suits best, will equally gravitate to the 2nd battalion, where at the same time there will be plenty of good work to be done; exchanges would be freely allowed, and thus a double-battalion regiment would suit all parties while also meeting the urgent requirements of the State.

I propose suggesting arrangements by which one at all events of the two full Colonels may be got rid of, but should this not be done, then the only thing is to leave both battalions to be commanded by full Colonels as now, and the junior of the three Majors must be given a company in the 1st Battalion until absorbed.

And now as to the cost of this proposed regiment of two battalions as against that of two of our present regiments.

This will be found in Table D, which shows that, including all the increases of pay which have been recommended, the whole only amounts to Rs. 15,879 a month. Yet that of two existing regiments is (Table B) Rs. $8,354 \times 2 = 16,708$; or a saving in favor of the proposed organization of Rs. 829 a month, which for 30 such regiments would amount to about three lakhs a year.

So that positively this great gain in power for meeting our enemies successfully in the field can be got, not only not at any ruinous cost, not only even at a very small cost, but actually for nothing at all, even perhaps at a slight saving!

I have not taken into consideration any "non-effective charges" first, because these would only equal those on an increase of two British officers per existing regiment, and some increase of this sort must, I imagine, be made in any case: and, secondly, because there will eventually be a corresponding decrease of such charges for native officers.

There would seem then to be no reason in the world why the 51 existing regiments of the Bengal Army (excluding the three Assam regiments and the Guides) should not be grouped into such Double-Battalion Regiments.

Supposing that five new Goorkha battalions are raised, and four new Punjab ones, the whole might then stand thus:

5 Goorkha Regiments	=	10 Battalions.
15 Punjab ditto	=	30 do.
10 Hindustani ditto	=	20 do.

Total 30 regiments, or 60 battalions, besides the Guides and the Assam regiments which might remain as now.

Thus this scheme will give, as regards the Bengal army, 30 first-rate battalions, such as the Government of India might send against *any* enemy.

Each being kept at a strength of 1,000 by its 2nd battalion, this makes a total of 30,000 Native Infantry, or the Native Infantry portion of a force of 80,000 men, allowing another 30,000 for British Infantry and 20,000 for Cavalry and Artillery. Or looking at it another way these 30 battalions will supply all that is required from the Native Infantry branch for two Army Corps from Bengal alone.

I see no reason why Bombay, at all events, should not do half as much which would give in all 45 such battalions, representing, as above, a total force of 120,000 picked troops.

I do not of course mean to say that this is all that can possibly be required; but it is at all events something to begin with; it is also formed without difficulty from our existing materials; and, *lastly, all this is done without costing anything at all.* For more, we should have to look to placing our two battalions on the same footing, and raising 3rd battalions to take the place of the 2nd battalions.

Of course there must be some objections to every scheme; were it not so, the matter with which it may deal would probably have been settled long before; and very possibly there are some to the scheme here proposed; but I cannot believe that there can be *any* which will at all counterbalance the enormous advantages to be thus gained without a single rupee of increased expense.

It may be objected that this system by giving all service (except in India, or against hill tribes) to the 1st battalion and by making the 2nd battalion take an inferior "rôle," will soon make the latter useless and inefficient, as neither officers nor men would care to serve in it.

To such argument my reply is:

- (1). Some sort of "first line" has now become simply indispensable, if we are to prepare *at all*; and *any* formation of a "first line" of picked troops implies a second line, which must thus, *under any scheme*, have a humbler "rôle."
- (2). It is not a case of one battalion *versus* another; the *regiment* must be looked upon as a whole, and the interests of both battalions considered identical; the rôle of the 1st battalion is to fight, and of the 2nd battalion, to supply the materials for fighting. There would be a constant flow upwards in all ranks from the 2nd battalion to the 1st battalion, and none having zeal, capacity, &c., need remain always in the 2nd battalion which must be looked upon as the training ground for the 1st battalion. In the case of native officers this flow upwards would be from the 2nd battalion to one of the Irregular regiments to be hereafter suggested.
- (3). At the same time there would be lots of good work to be done by all ranks during such time as they were in the

2nd battalion in (1) *recruiting*, and (2) *training*, and there are certain men who have special aptitudes for these duties.

- (4). All ranks should be made to understand that the sole passport to the higher distinction of the 1st battalion (or in the case of native officers to the Irregular Regiment) would be good work done in the 2nd battalion. The ordinary course would be a certain period of preliminary service in the 2nd battalion before advancement to the 1st.

With such a system I do not believe there would be any of the evils above anticipated; and moreover it must not be forgotten that the problem is how to produce the same effect, *viz.*, 30 such battalions as these 1st battalions, in any other way without any increase over present expenditure.

It would make this paper too long to go into the question of a reserve of British officers, but it may be noted that in time of war the 2nd battalion could do quite well for a time with only three, and so could spare two, while it is also to be presumed that at such times extra British officers would be obtained and attached to it ready to supply the wants of the 1st battalion.

PART III.

I would now refer to the objection noticed in para. 25 as to energy and zeal being destroyed by the closing of prospects of promotion: but in considering this point it should not be lost sight of that putting the battalions intended for meeting an European enemy in the highest possible state of preparation for that purpose *must* have priority over all other considerations.

At present the commissioned grade has come to be looked upon secretly by a large proportion of the Havildars who attain to it as merely a superior pension, a position of rest and ease after long and approved service; nor is this strange when it is remembered that a havildar's "ordinary" pension is only Rs. 7, whereas as a jemadar he would get Rs. 40; for this such men will simulate any amount of zeal. I am certain that one-half the difficulties in making native officers all that they should be are due to this one cause, *viz.*, that, though once keen enough, their hearts are *in reality* no longer in the business, though they naturally prefer the pay and position of a native officer to the pension of a havildar.

This being entirely opposed to the interests of the State and of regiments, as well as to the more stringent requirements of the present time, there will be no real hardship in making all such men take a pension instead of receiving promotion, but at the same time I think their pension might be a little improved. The proportion of this class (which may be called class I) may, I think, be taken at about $\frac{1}{3}$ rd of those who now get promotion, say 5 or 6 out of 16; and for such I would suggest a rather more liberal grant of the havildar's "superior" pension, now given only after 32 years service, but which might, I think, be given

at the average period at which such men now get promoted, together with a slight increase in its amount, *viz.*, of Rs. 3, which will make it equal to the "ordinary" pension of a jemadar, *viz.*, Rs. 15. This will be more than counter-balanced by the reduced number of native officers' pensions.

Of the remainder another third or more (say 6 or 7 out of 16) will be good, capable men, thoroughly fit for employment as native officers. These may be called class II; and there are places for all these as native officers in the 2nd battalions.

There will remain a small minority (say 3 or 4 out of 16) of very exceptional men. These may be called class III, and for these I suggest that there should be exceptional openings (as below) better than those which now exist.

Our present organization is neither the "Regular" nor the "Irregular" system, but a compromise between them; and it has the faults of all compromises. Under it the native officer does not get full scope, nor (as I have shown) the British officer either. Each, in my opinion, counteracts the good points of the other. Why then not separate them to some extent?

Simultaneously therefore with the formation of a certain number of regular regiments, I at the same time suggest there might be a few purely irregular regiments in which all the officers, including perhaps even the Commandant, should be selected native officers.

I do not of course propose that there should be more than a very few such regiments, nor that against an European enemy they should be used as more than auxiliaries. As light troops for all "guerilla" purposes they should be very valuable, and service in them would be sure to be immensely popular. They would of course be commanded by very exceptional men; the Commandant might of course be a British officer, but what I should like best to see would be the *full* scope given by the Commandant himself being a native officer of distinction. I should like to see men of the stamp of my friend Ressaldar-Major Sirdar-Bahadur Mahomed Uslam Khan, (at present Commandant of the Corps of Khyber Levies) placed in command of such regiments and told to show what they were made of by the result; I am sure these would be good. The Corps of Khyber Levies is itself something the style of thing, but of course these regiments would be in advance of that in many ways.

I would not suggest more than 6 or 8 such regiments.

A convenient arrangement would be that each Irregular Regiment should be affiliated to 3 or 4 of the double-battalion regiments which might be grouped for the purpose; all men of class III above, promoted to native officer from one group, going to one particular Irregular regiment. Thus, with reference to para. 48, there might be—

1 Goorkha Irregular Regiment.

5 Punjab Irregular Regiments.

2 Hindustani Irregular Regiments.

Thus on a havildar in either battalion of the proposed regiment reaching the top of this grade, his next step would be :

- (1) To superior pension if he belonged to class I.
- (2) To native officer in the 2nd battalion, if he belonged to class II.
- (3) To native officer in the affiliated Irregular Regiment, if he belonged to class III.

As a rule however (2) and (3) would both go first into the 2nd battalion, men of class III being afterwards promoted from that to the Irregular Regiment.

Under the present organization once a man becomes a Subadar he has no more to look forward to ; under that here proposed *all* would have much more to strive after. And if the principle is strictly observed that good work done in the 2nd battalion is the only passport for native officers to the Irregular battalion, there should be no falling off at all from the present standard of energy, zeal, etc., but quite the reverse.

It only remains to notice what might be done to reduce, in forming the new regiments, the present excess of full Colonels ; and any suggestions regarding this are of course quite distinct from the rest of the scheme.

To effect this object many things have been tried, but nevertheless there stand the full Colonels as firmly as ever in command of regiments ; causing Lieutenant-Colonels to hold Major's places, and Majors those of Captains.

The problem, as I understand it, is to find some way of inducing such officers to vacate regimental commands while, neither compulsorily ejecting them from the service, nor relegating senior officers, possibly of the highest capacity, to that *most heart-breaking and zeal-destroying death-in-life*—"General duty."

The cause of the difficulty seems to me to be this, that the command of a regiment is at present the next best appointment to a Brigade command, that of a station being nowhere in comparison ; consequently the men next in rank to a Brigadier-General naturally hold (as long as they can) this next best appointment.

I suggest that this cause may be removed by exalting the pay and position of Commander of a Station above (instead of below) that of a regiment, interpolating the rank of Colonel on the Staff Commanding a Station between a Brigadier General and a Regimental Commandant.

The Staff pay of such Station Commandants (Colonel on the Staff) might, I think, be Rs. 700 a month ; and to make this appointment better paid than any Regimental Command, as well as to find funds for the same, the Staff pay for the command of all Infantry and Cavalry Regiments might perhaps be reduced each by 100, though this is not absolutely necessary (paragraph 59).

The appointment of Colonel on the Staff, Commanding a Station, would thus become the natural step upwards on the ladder of military advancement above the Command of a Regiment ; while stations also would get much better managed under such permanent Commandants than under the unpaid, or very little paid, ones they have now, who being generally also in command of a regiment have no time to attend to their Station Command properly.

Excluding the Guides, there are in all 77 Infantry and Cavalry Regiments; therefore there should I think be 25 such appointments.

As regards funds, the balance to the good at the foot of Table D shows that without increased expense to Government there can be at least one such appointment created for every Double Battalion Regiment formed. As a matter of fact, including the small allowances now granted for the commands of 11 Stations (exclusive of Hill Depôts) amounting in all to Rs. 2,850, there are actually funds for as many as 39 such appointments (*viz.* $\frac{829 \times 30 + 2850}{700} = 39$) but probably 25 would be sufficient, especially as this is about the number of garrisons having three or more distinct Corps.

The Stations might be—

- | | |
|-----------------------|----------------------|
| 1. Cawnpore. | 14. Jhansi. |
| 2. Delhi. | 15. Dera Ghazi Khan. |
| 3. Kohat. | 16. Jhelum. |
| 4. Ferozepore. | 17. Benares. |
| 5. Barrackpore. | 18. Umritsur. |
| 6. Fyzabad. | 19. Allahabad. |
| 7. Dinapore. | 20. Lucknow. |
| 8. Jullundur. | 21. Meerut. |
| 9. Saugor. | 22. Umballa. |
| 10. Nowgong. | 23. Meean Meer. |
| 11. Edwardesabad. | 24. Bareilly. |
| 12. Dera Ismail Khan. | 25. Jubbulpore. |
| 13. Nowshera. | |

The last 7 are Head Quarter Stations of Divisional or District Commands, and there would be many advantages in having permanent commanders for these too, instead of making the General Officer Commanding the Division command also the Station.

Supposing, however, that the balance at foot of Table 1 is absorbed by giving (para. 41) each sepoy in the last Battalion, one rupee more than those in the 2nd Battalion, then it will be necessary to find the funds for these appointments by reducing the Regimental Command Staff, as above suggested, to Rs. 500 for Infantry and Rs. 600 for Cavalry. But the command of a regiment is quite a sufficiently pleasant position without receiving more than double the Staff pay of the 2nd in command, *provided always that there is something better ahead to look forward to*, as here.

In this case the amount available will only be ($\frac{100 \times 77 + 2850}{700} = 15$) sufficient to provide 15 such appointments, so that the number must in this case either be reduced to that, or the difference be made up by Government.

The tenure of these appointments might be limited to 5 years or succession to Colonel's allowances, whichever occurred first; and these officers, while altogether "*de trop*" in regiments, would be invaluable as Station Commanders.

Probably many men by the time they were 30 years service or so,

would prefer such an appointment with Staff pay at Rs. 700 to a Regimental command with only Rs. 500 or 600.

Thus in place of 11 existing Station Commands of

2	@	Rs. 400
1	@	„ 300
3	@	„ 250
5	@	„ 200

there would be 25 (or at the least 15) appointments each with Rs. 700.

This, I believe, to be the only effectual and satisfactory way of relieving regiments of these officers, whose more suitable position, I submit, is the command, not of one corps, but of several, grouped into a Station Command.

PART IV.

Conclusion.

To sum up, the proposals made in this paper are—

- (1.) Thirty Regular Battalions on a permanent war footing of 15 British Officers and 1,016 native ranks; for sending into the field against an European enemy.
- (2.) Thirty Battalions on the present organization and strength; for garrisoning India, and also keeping the ranks of No. I, when on service, filled with trained men.
- (3.) The above to form 1st and 2nd Battalions of one regiment; the former thus giving a thoroughly satisfactory force of 30,000 Native Infantry fit to send against an European enemy, or with 15 more similar Battalions from Bombay, a force of 45,000 such Infantry; being thus all that is required as far as the Native Infantry is concerned for a force of 120,000 picked troops.
- (4.) A few Irregular Regiments officered entirely by native officers; not intended for brigading with British troops, but for guerilla warfare only.
- (5.) The creation of a certain number of Station Commands, held by Colonels on the Staff, as an office above that of Regimental Commander, and with Staff pay @ Rs. 700 a month.

Whether these arrangements will enable regimental promotion to be adopted for all purely military officers, is too long a question to go into here; but it seems at least *probable* that this scheme, while adding enormously to the fighting power of the country, may contain in it the germs of a means for getting rid, at one blow, of three serious difficulties together which have long sorely troubled the Indian army, and so killing three very large birds with one stone, *viz* :

- A. The paucity-of-British-officers difficulty.
- B. The retarded-promotion difficulty.
- C. The Staff Corps difficulty; by which I understand to mean the preponderance of senior officers in subordinate positions.

The first of these, this scheme fully provides for—there will be sufficient British officers *at last*.

As regards the second, in a regiment having five Field Officers, six Captains, and nine Lieutenants, promotion, if allowed to go regimentally, should be all that could be desired, while the position of the Captains and Lieutenants would be considerably improved, which is just what is so much wanted.

It would therefore seem that, for purely Military Officers, the Staff Corps and Staff Corps promotion might at last be abandoned to the infinite relief of all concerned.

While as regards the third difficulty, which is bound up with the above, the suggestion as to Station Commands would seem likely to prevent any further superabundance of senior officers in subordinate positions as far as the army, pure and simple, is concerned.

But the real point is the Regular battalions with plenty of British officers and companies led by Captains. These, whether got for nothing by having Double-Battalion Regiments, as I strongly urge, or by themselves, at some expense,* we *must* have very soon, if not now and how much better now than by putting it off to play with a great danger. Such changes cannot be made when a country is embarking on a great war; therefore there is truly in this "no time like the present," when we have got a brief breathing space in which to prepare.

In conclusion, and at the risk of being tedious, I would once again refer to the absolute *necessity*, if companies are to be led in action by British officers, that they must be commanded by those same officers in quarters. As far as expense goes there is no particular reason why in addition to the 15 British officers, the 1st battalions of the proposed regiments should not have a Jamadar or a Subadar, or even both, to each company, as both would only cost Rs. 810 altogether. The balance in favor of the proposed regiment over two existing ones will allow of one of three things :

- (a). An increase of one rupee a month to the pay of the sepoy of the 1st battalion.
- (b). The creation of 25 Station Commands as proposed without reducing the command pay of regiments.
- (c). The addition of a Subadar and Jamadar to each Company.

But, while there is therefore no financial reason against (c), I am most strongly of opinion that in these particular battalions, intended to be put to a different use than any our native regiments have yet been put to, that native officers will be out of place and in the way ; a weakness and not a strength.

The native of India, in common with all Asiatics, has lots of romance and enthusiasm in his nature if only the right chords are touched, more a good deal than we somewhat phlegmatic Britons have ; but the calling it forth seems almost a lost art now-a-days when officers, both civil and military, know so much less of the people than in old days.

* About Rs. 1,400 per month per battalion ; vide Part I.

Look how men like Sir Henry Lawrence and Sir John Lawrence and many other illustrious Punjab officers of those days, knew how to touch those chords; mention their names even now in the villages of the Punjab and watch the enthusiastic remembrance of them even after all these years. Such feelings were not aroused by dealing with the people through any middleman, whether tehsildar chief, or native officer, but solely by personal communication with them face to face. And this is ten times more true where *soldiers* are concerned.

The British soldier's enthusiasm and romance are stirred by the honor of the "old regiment" or of "old England;" the sepoy cares for none of these things; he has no "country"; all regiments to him are very much alike; while the word "old" has no flavor of romance about it for him; *esprit-de-corps* is not a plant which grows in the native breast to the luxuriance it does in ours.

But to balance all these in place of Queen, and country, and regiment, the sepoy is capable, if the feeling is given a chance of growth, of getting up an amount of enthusiasm over "Jones Saheb," or "Smith Sahib," such as is almost incomprehensible to an Englishman, and which, if evoked, will fill the place of Queen, country, regiment, and everything else.

The English officer who, as a Company Commander, will first win his way into his native soldiers' heart by learning with patience to understand him, by being perfectly just and kind and yet free from all favoritism, and above all by showing himself his superior, or at all events his equal, in field sports and athletics, &c.; who will then teach that native soldier all he has got to learn as only the man who has first laid the above foundation can teach him; and who after all this will be his leader against the enemy; *that man will be able to make the Sikh, and the Dogra, and the Ghukkur do anything that men can do, and under such a leader the Punjabi soldier will face either a Russian or any other enemy, or the devil himself.*

But to do this we must have him to ourselves, in quarters as in the field, with no native officers to come between; and thus have the association and the knowledge which only the Company officer can get. *Give us this power to learn, and to teach, and to sway our Punjab soldiers, and we will take them against any enemy in the world.*

To lead a soldier you must understand him; to understand him you must be associated in all the minor details of his soldier's life in the way that only the Company officer is, who can thus, if he will, gain an influence and a power over the soldier which no other officer whatever can gain, be he Staff officer, Colonel of a Regiment, General, or what not.

While it was once our happy lot to be still in our own dearly-loved British Regiments, the place of which in our hearts no other Regiment can ever take, we all of us took a pride and pleasure, as Company officers, in learning the characters and ways of our soldiers, whether English, Irish, Welsh, or Highlanders. Those days are gone, but

now that it is ours to lead other soldiers, with other characters and ways, give us the same power, (here of so much more effect) to read and to sway these others, viz., the daily and hourly opportunities of the *Company Officer*.

GEORGE F. YOUNG, *Major*,
Assistant Quarter-Master General.

SIMLA, 1st September 1885.

TABLE A.

Cost (monthly) of Officers and Non-Commissioned Officers of proposed Regular Battalion—1,016 Strong.

DETAIL.				Rank pay,	Staff pay.	Total pay.
				Rs.	Rs.	Rs.
<i>Officers.</i>						
1	Lieutenant-Colonel	...	...	828	600	1,428
1	Major	...	...	641	300	941
6	Captains, (@ 374 + 200 = 574)	...	...	2,244	1,200	3,444
1	Lieutenant (Adjutant)	...	...	225	200	425
1	Lieutenant (Quarter-Master)	...	...	225	150	375
5	Lieutenants (@ 225 + 100 = 325)	...	...	1,125	500	1,625
<i>Contract Allowances.</i>						
6	Company allowances for repair of arms, @ 35	...	...	...	210	210
	Adjutant's office allowance	...	...	...	50	50
	Quarter Master's office allowance	...	...	...	35	35
<i>Non-Commissioned Officers.</i>						
1	Havildar-Major	...	...	18	12	30
1	Quarter-Master Havildar	...	...	16	10	26
48	Havildars, @ 15	...	...	720	...	720
48	Naicks, @ 12	...	...	576	...	576
	Staff pay of 6 Pay-Havildars, @ 10	...	...	...	60	60
	Do. of 1 Drill Havildar	...	...	...	10	10
	Do. of 6 Color Havildars, @ 5	...	...	...	30	30
TOTAL RUPEES				6,618	3,367	9,985

Strength of proposed Regular Battalion.

1,016	1	Havildar-Major	...	In 6 Companies.
	1	Quarter Master Havildar	...	
	48	Havildars	...	
	48	Naicks	...	
	18	Drummers	...	
	900	Sepoys	...	

TABLE B.

Cost (monthly) of Officers, Native Officers, and Non-Commissioned Officers of an average existing Regiment—816 Strong.

DETAIL.	Rank pay.	Staff pay.	Total Rupees.
<i>Officers.</i>			
	Rs.	Rs.	Rs.
1 Commandant (a Colonel) ...	828	600	1,428
1 2nd in Command and Wing Commander (a Lieutenant-Colonel) ...	828	270	1,098
1 Wing Commander (a Major) ...	641	230	871
1 Wing Officer (a Major) ...	641	100	741
2 Do. (Captains) ...	748	200	948
1 Lieutenant and Adjutant ...	225	200	425
1 Lieutenant and Quarter Master ...	225	150	375
<i>Contract Allowances.</i>			
2 Wing allowances for repair of arms, @ 85 ...	...	170	170
Adjutant's Office allowance ...	...	50	50
<i>Native Officers.</i>			
1 Subadar-Major ...	100	50	150
3 Subadars, @ 100 ...	300	...	300
4 Subadars, @ 80 ...	320	...	320
1 Jemadar and Native Adjutant ...	50	17	67
3 Jemadars, @ 50 ...	150	...	150
4 Jemadars, @ 40 ...	160	...	160
<i>Non-Commissioned Officers.</i>			
40 Havildars, @ 14 ...	560	...	560
40 Naicks, @ 12 ...	480	...	480
Staff pay of 8 Pay Havildars, @ 5 ...	...	40	40
Do. of 1 Drill Havildar, @ 5 ...	...	5	5
Do. of 8 Color Havildars, @ 2 ...	...	16	16
TOTAL RUPEES ...	6,256	2,098	8,354

Strength of existing Regiment.

816 { 40 Havildars ...
40 Naicks ...
16 Drummers ...
720 Sepoys ... } In 8 Companies.

TABLE C.*Showing Officers of Existing and of Proposed Regiments.*

(1) Officers of 2 average Regiments under existing organization.	(2) Officers of a Double-Battalion Regiment under proposed organization.
<p>1ST REGIMENT.</p> <p>1 Commandant, a Colonel } 3 1 2nd in Comd., a Lt.-Col. } Field 1 Wing Comdr., a Major } Officers. Wing Officers { 1 Captain. { 4 Lieutenants.</p> <p>TOTAL 8 OFFICERS.</p>	<p>1ST BATTALION.</p> <p>1 Lieutenant-Colonel } 2 1 Major } Field 6 Captains } Officers. 7 Lieutenants</p> <p>TOTAL 15 OFFICERS.</p>
<p>2ND REGIMENT.</p> <p>1 Commandant, a Colonel } 3 1 2nd in Comd., a Major } Field 1 Wing Comdr., a Major } Officers. 5 Wing Officers { 3 Captains* { 2 Lieutenants.</p> <p>TOTAL 8 OFFICERS.</p>	<p>2ND BATTALION.</p> <p>1 Colonel, Commandant } 3 1 Major, 2nd in Comd. } Field 1 Major, Wing Comdr. } Officers. 2 Lieutenants { Adjutant. { Quarter Master.</p> <p>TOTAL 5 OFFICERS.</p>
<p>TOTAL OF THE 2 REGIMENTS.</p> <p>2 Colonels } 6 1 Lieut.-Colonel } Field 3 Majors } Officers. 4 Captains 6 Lieutenants</p> <p>TOTAL 16 OFFICERS.</p>	<p>TOTAL OF PROPOSED REGIMENT.</p> <p>1 Colonel } 5 1 Lieutenant-Colonel } Field 3 Majors } Officers. 6 Captains 9 Lieutenants</p> <p>TOTAL 20 OFFICERS.</p>

* In some few cases one of these Wing Officers will be a Major and will have to be sent to command a Company in the 1st Battalion until absorbed.

TABLE D.

Cost (monthly) of Officers, Native Officers and Non-Commissioned Officers of proposed Regiment of two Battalions.

DETAIL.	Rank pay.	Staff pay.	Total Rupees.
<i>2nd Battalion,</i>	Rs.	Rs.	Rs.
1 Commandant, (a Colonel) ...	828	(a) 600	1,428
1 2nd in Command, (a Major (b)) ...	641	270	911
1 Wing Commander, (a Major) ...	641	230	871
1 Lieutenant and Adjutant ...	225	200	425
1 Lieutenant and Quarter Master ...	225	150	375
2 Wing allowances, @ 65 each (for 3 companies) ...	...	130	130
Adjutant's office allowance ...	...	50	50
1 Subadar-Major ...	160	50	150
2 Subadars, @ 100 ...	200	...	200
3 Subadars @ 80 ...	240	...	240
1 Jemadar, Adjutant ...	50	17	67
2 Jemadars, @ 50 ...	100	...	100
3 Jemadars, @ 40 ...	120	...	120
30 Havildars, @ 14 ...	420	...	420
30 Naicks, @ 12 ...	360	...	360
Staff pay to 6 Pay Havildars, @ 5 ...	...	80	30
Do. to 1 Drill Havildar ...	...	5	5
Do. to 6 Color Havildars, @ 2 ...	...	12	12
TOTAL COST OF 2ND BATTALION, Rs. ...	4,150	1,744	5,894
ADD COST OF 1ST BATTALION AS PER TABLE A ...	...	...	9,985
TOTAL COST OF PROPOSED REGIMENT ...	...	...	(c) 15,879

N.B.—Cost of the same for two existing Regiments Rs. 16,708.

(a) The proposal made in Part III would reduce this to Rs. 500.

(b) This is correct as per page 137 ; ranks being as per Battalion of Table C.

(c) The cost of two existing regiments (Table B) is $8,354 \times 2 = 16,708$, so that there will be a saving on each regiment of Rs. 829 a month.

APPENDIX

THE REFORM OF THE NATIVE ARMY.

THE adjourned discussion upon Major G. F. Young's paper on the Re-organisation of the Native Army took place on October 3rd at the United Service Institution, Simla. Some thirty members dined together, General Leslie, R. A., being in the chair, and after dinner the subject was brought forward.

Major Young read the following summary of his paper :—In the paper I had the honour to read a few days ago on this subject, I first drew attention to the absolute necessity of now preparing a certain proportion of our native regiments to meet a European enemy. I said that splendid troops as our best native regiments were, it was neither wise nor fair to put them to such a severe strain except when as fully equipped for it as the British regiments with whom they were brigaded ; and that the most vital point of all such preparation was to give them British leaders to the companies. I pointed out that the greatest deeds of our native troops in times past were due solely to such leading ; and argued that if the latter was such a vital ingredient of success against Asiatic enemies, how much more so against Europeans ; while if such results were obtainable from the Hindustani sepoy of old days, how much greater would they be with the more warlike races whom we now put in our first line. I therefore proposed that a certain number of selected regiments, intended for this purpose, should be made what are called Regular regiments, and given an organisation of 1 lieutenant-colonel, 1 major, 6 captains of companies (each of 150 sepoys) and 7 lieutenants : total, 15 British officers and 1,016 native ranks. Also that in such regiments there should be no native officers, not because I do not appreciate the native officer quite as much as anyone, but because in these particular regiments he will prevent the British company commander from getting full scope with his men. On this latter point I said that it was undeniable that sepoys would do much more under a British officer than under a native one, however capable ; that the company is and must ever remain the real fighting unit of infantry ; and that therefore against Europeans that unit must be led in the field by a European ; and I argued that if this were the case, then in this, as in all other armies, that unit must be commanded by the same officer in quarters ; that the casual taking command of such units in action, by the supersession of the regular company commander, was a system opposed to all military experience, and that the leader in action and the commander in quarters must be one and the same. The composition and pay of such proposed regular battalions are shown in Table A of the paper. Such a change would add enormously to the fighting power of the country ; yet I showed that it is obtainable without a single rupee of increased expense. That is to say, by having double battalion regiments, of which the first battalion should be a regular battalion of the above organisation, and the second battalion one of our present organisation, but with no British officers below the wing commanders, except an adjutant and a quartermaster, and divided into six companies instead of eight. And I showed by Table C that to convert two of our existing regiments into such a double battalion regiment is perfectly simple and easy, and by Tables B and D, that the cost of such regiments would be actually rather less than two of our existing ones. Thus, the 1st battalion would be a battalion always maintained at full war strength of 15 British officers and 1,016 native ranks ; it can cease all recruiting on

taking the field, and has to form no dépôt. The 2nd battalion would take all increase caused by the calling out of reserves, and would keep the ranks of the first full. At the same time the 2nd battalion is perfectly fit for all service in India as now. I proposed, therefore, that our existing regiments should be grouped into five Goorkha regiments, 10 battalions, fifteen Punjab regiments, 30 battalions; ten Hindustani regiments, 20 battalions; giving thirty 1st battalions, such as the Government of India might send anywhere. Supposing that Bombay at all events could produce fifteen more such regiments, this would give (in first line) 45,000 native infantry, or all that is required, as far as native infantry goes, for a force of picked troops of 120,000 men. Regarding the possible objection that zeal and a proper ambition would be destroyed by reduced chances of promotion, I said that, far from anything of the sort, I proposed a fuller scope and better chances for these than now, by the creation of a few purely Irregular regiments, in which all officers should be selected native officers. I pointed out that our present organisation was a compromise; and that under it the British and native officers counteract each other, this counteraction increasing the more highly you train the native officer and the more you add British officers. I therefore proposed that simultaneously with the creation of a certain number of regular regiments, there should be created six or eight irregular regiments, and I suggested that these might be one Goorkha irregular regiment, five Punjab irregular regiments, two Hindustani irregular regiments. As a means for getting rid of the present plethora of senior officers, I made a suggestion for twenty-five appointments as colonels on the staff, commanding stations, with staff pay at Rs. 700 a month. In conclusion I again urged most strongly the point that British leaders of companies we must have for such a contest, and that if this power is given us by Government, we shall take at all events the Punjabi soldier (whom alone I know personally) anywhere. In making propositions on such subjects, one is always liable to find that something very similar has been proposed at some time or other before; and since this paper was written I have learnt that similar views have been expressed in by-gone years by such high authorities as General Wilson, General Watson, and Brigadier-General J. J. Gordon; but apparently the difficulty of the expense has always been held insuperable. I cannot, therefore, claim entire originality in the matter, though I knew nothing of this when the paper was written; but I have at any rate now shown how it can be done without costing anything.

The Chairman, in the course of a few remarks, said he did not like the total throwing aside of the Madras Army by Major Young—(hear, hear). As the old Coast Army they did right good service, and though now wanting somewhat in physique, it was due to their having to support so many of their relatives—even down to their sisters and their cousins and their aunts. Such Madras troops as were employed in the late Afghan war kept in good health and proved useful. The Madras Sappers were recognised as an exceptionally fine body of men, equal to any work—(hear, hear).

Colonel Crookshank said he should be sorry to see the present stamp of native officer done away with. In many cases experienced native officers were more valuable than young British officers. It must be remembered that the native Army was a young army; on its present footing it was only between twenty and thirty years old. It must be given time to grow. Old and effete native officers must be got rid of and new blood imported into it—(hear, hear). The Native Army of to-day was an army of average efficiency: the army proposed by Major Young would be an army of which half would be of greater efficiency and half of less efficiency. This would not be a gain. At present, in case of war, the whole army would be capable

of taking the field; but in case of the proposed alteration being carried out, only half would be fit to go to the front. Colonel Crookshank then touched upon the loss of British officers in action, and said at present, when these were put *hors de combat* by death or wounds, there were native officers who could and would lead their men. Under the new system no such leadership would be possible in the "Regular" regiments. If a native officer were not considered fit to command a company, how would he be fit to command an Irregular regiment. He spoke also in favour of the double company organisation as giving the best means of utilising the services both of British and native officers.

Major Gaselee said:—Major Young's able lecture has put before us in clear and concise language many of the defects which at present exist in the organisation of the native infantry, and it also proposes remedies which are, as far as I know original. The object of this discussion is, I imagine, to find out how far these proposed remedies are considered practical by the officers who would have to carry them out were they adopted. The intention of all reforms is to induce a state of things better than that already existing. In introducing reforms it is also necessary to consider carefully how far we can go so as not to uproot and interfere with the principles which underlie our administration. We shall probably all admit that one of the main reasons why it is necessary for us in this country to maintain a Native Army, is to afford an honourable career to the large number of men of warlike classes who would otherwise be entirely without proper employment, or would prey in various ways on the community at large. In part I of the lecture, Major Young gives us in detail the composition of a battalion for service against a European enemy. I most fully agree with him that the number of British officers he gives is not one too many for a regiment on active service. I cannot, however, quite see how it would be possible to ensure the rapid disappearance of field officers, which would be necessary under the present conditions of service of British officers. At present officers can remain in regimental employ up to 32 years' service, and practically cannot retire on an adequate pension before they have completed that length of service; there is, therefore, no flow of promotion in the higher ranks, except that caused by the usual casualties of life or of active service. Again, I cannot agree with the lecturer in thinking that it would be advisable to do away with the native officer in the service battalions. If this were done, I believe it would seriously affect recruiting, and that we should be partially taking away one of the objects of the ambition of the native soldier, and removing what I consider to be a very great check on any tendency to disloyalty which might occur. The native officer has a great deal to lose; his pay is good, and his position is one of honour and respectability, both in the regiment and when he returns to his village on leave or pension. I most fully endorse the lecturer's opinion that the pay of havildars should be improved. The great difficulty now is to induce good men to stay in regiments. Agricultural prospects have much improved, and in various ways men can earn very much more than in soldiering. It is very encouraging to see how much Government are now doing to improve the position of the soldier, and there is much yet which might still be done. We must never forget what a cheap army we have, nor that all the money we spend upon the Native Army is money spent actually in the country and upon the people of the country, and cannot be said to be wasted. If we cannot afford to treat our army well, let us even reduce troops in parts of India where they are less required, and pay those we have to rely on handsomely; it will pay us in the end. I therefore say retain native officers: I do not think it would be good policy to unsettle men's minds by any reduction. We should certainly be most careful in promoting, and give up the idea which we all cling to more or less that seniority is a

claim. The proposal in Part II to provide 2nd battalions to the service ones seems to me as it stands to offer many objections. It would doubtless be an advantage to have two affiliated battalions, but I should prefer to see them existing on equal terms, and taking turn and turn about of active service. I should much fear that the proposals in the lecture would result in the deterioration of the 2nd battalion to such an extent that it would become unfit for active work. I cannot conceive any officer voluntarily submitting to play such a secondary rôle as that assigned to officers in the 2nd battalion; nor do I think it would be a right principle for Government to adopt that there could be positions in which officers had it in their power to forego to a great extent the more active duties of their profession. I think that the evils to be expected from this would outweigh the advantages even of the liberal scale of British officers allowed to the 1st battalion, and I think it would be better to place both battalions on equal terms with, say, ten or twelve officers each, and allow three or four officers of the battalion, whose turn it was to remain in India, to volunteer for service with the battalion ordered into the field. With regard to Part III, I think there is still considerable scope beyond the border for Irregular corps; but I should prefer to have them commanded by a specially selected British officer with a second-in-command and adjutant; the native officers in these corps should be men of influence; and I see no reason why a small proportion should not be given commissions up to the rank of captain, whilst serving with honorary rank up to lieutenant-colonel on retirement. This would, I think, offer inducements to military life to a class of men we do not often get now, and to some extent the army would lead to a position now only to be gained by natives of India in civil life. In concluding these remarks, I would beg to bear my own testimony to the amount of work which can be got out of native troops by officers they look up to, and who look after their interests. To serve beyond the border in cold climates a native of India must be well clothed, well fed, and he must have complete trust in the officers under whose immediate charge he is and in the Government he serves, that his own interests and the welfare of his family will be looked after—(hear, hear).

Captain Boley, 25th Punjab Infantry, said: I think there is not the slightest doubt that what Major Young has shown us about the necessity for more British officers with native regiments at the decisive point is correct as regards the main principle. The very custom of the present day points to the moral weight which the British officer carries over natives as compared with the native officer. When a company is detached on any important work, who goes in command as a rule? A British officer. Again, the withering fire of the breech-loader in the hands of a European enemy requires a very extended order. This extended order means far greater difficulty in commanding the company in action with such a widely spread front, and I think it will be allowed that a British officer must be more capable of successfully meeting those difficulties than a native officer, good as the native officer has proved himself against Asiatic foes not armed as a whole with the breech-loader. Take again the statistics of the latest battles in which breech-loaders have been used on both sides. The loss of officers is enormous; and officers with native regiments labour under the additional disadvantage of wearing a head-dress different from the men, making them conspicuous objects at 400 yards or even farther. These appear to me to be the practical arguments for having the number of available British officers at a maximum for service against a European enemy. But how to increase our present number? I think it will be allowed that to replace our present native company commander by a British officer is a retrograde movement which the times do not admit of. Everything points to the desire of the authorities both at home and out here to improve the status of the native

officer, which condition will hardly be met by putting a Britisher over him in the company as a permanent peace measure. I dare say we all remember a sentence in one of Lord Randolph Churchill's speeches shortly after his return from India. He said: "Your rule in India, my Lords, is like oil poured on troubled waters." As I understand it, he meant to say that the system under which we hold this vast land was one which brought contentment and love of quiet to its people by amalgamating them with ourselves, accepting their loyal services, and making them feel that they are part and parcel of the Empire. Their services—in the military line to which, of course, my remarks only refer—must be rewarded, and under present rules, are so by making the acquisition of the sword of the commissioned officer and the honour and dignity which attaches to that position—a great point as Major Gaselee showed—open to every soldier who qualifies for it by length of loyal service and merit. I now maintain that the prestige of our name is so deeply rooted in the minds of our native troops that they will follow *any* British officer, whether they have been associated with him daily in cantonments or not, simply because *he is a British officer*. I further maintain that in that widely-extended-company in the fighting line, to which I have before alluded, the presence of its own native officer will be a valuable aid to the British officer who is told off to superintend the action of that company before the enemy. I cannot agree with Major Young that the *esprit de corps* does not exist in the Native Army. In Punjab regiments—of which alone I am at liberty to speak—I think it *does* exist in a marked degree. It is noticeable in inter-regimental sports, tugs-of-war, firing matches, and in the annual course of musketry. It was noticeable recently at Baker's zarea when the XVth Sikhs, according to private accounts, with a shout, stood shoulder to shoulder firm as a rock, when troops in the vicinity showed a tendency to waver. I do not think that the system of making a permanent fighting-line portion, and a permanent stay-at-home portion, is advisable; the ardour of the latter would be sapped.

I, however, maintain to the full Major Young's main principle, that we must unhesitatingly have more British officers to meet a European enemy; and it appears to me that the system of brigading three battalions together, which we have lately heard talked about, may, when carefully worked out, afford a simple and practicable solution of this difficulty.

Colonel Menzies related a conversation he had with a Sikh who had lost his arm at Sohraon. "Sahib," said the old soldier, "you beat us, but it was not because you were better than we were. It was your *boy officers* who were always in front of their men; while our sirdars sat on horse-back in rear and only cried out "*Ghullao! agi burrao!*" (Laughter and hear, hear). It was just this leadership of European officers which the sepoys best understood and appreciated. Promotion by seniority among native officers was a great mistake: the system should be one of promotion by selection—(hear, hear). Then our native officers would be equal to anything that could be required of them.

Colonel Holmes, Intelligence Branch, said a better stamp of native officers might be got if a certain number of commissions were given to cadets of good family (young men carefully selected), instead of recruiting the officers from old men who had risen from the ranks, though of course a flow of promotion must be kept up in every regiment.

Major Gowan said he was desirous of offering a few remarks on the present occasion, because he had some little time before, in connection with the meetings held from time to time at the Institution for the purpose of talking over similar subjects, suggested for discussion what he might term "proposals for the opening out of a more extended career to certain classes of native officers." He was not aware when he had done so that this particular

subject was held to be one of some delicacy, and therefore, in order to guard himself from any misapprehension in the matter, he would invite attention to his general views as regarded native officers. With regard to Major Young's scheme, it seemed to him that the whole question was possessed of two aspects—"military efficiency" and "political expediency"—and that of the two the latter stood out in the more prominent colouring; hence arose the very greatest difficulty in dealing with such a subject as that before the meeting. Major Young had spoken after an experience of 16 years' service with one Punjab regiment, and had given expression to the opinion that the native officer was "a veil" rather than "a link" between the British officer and the sepoy. Now, from frequent conversations with officers both of the Punjab Frontier Force and of regiments under the orders of His Excellency the Commander-in-Chief, and from his own varied, if, perhaps, limited connection with native troops, he (Major Gowan) was quite unable to arrive at such a conclusion; and he was, moreover, of opinion that as with the native officer the greatest care should be exercised in his promotion to the commissioned ranks, so, too, with the selection of the British officer for service with natives should equal care and discrimination be observed. As he understood the scheme before the meeting, he thought that the rank of "native officer" would practically be eliminated altogether from the first line of the Indian Army, and that, therefore, Major Young's proposal to open a career for certain classes of native officers in Irregular battalions to be employed in a system of guerilla warfare, was an insufficient offering of *honourable* service to scions of the many good families in British India, of whose members so large a number had in time of no ordinary danger and difficulty proved their loyalty and devotion to the British Crown. He thought, too, that an opening might be found for such men in the question concerning "the best way of utilising in our own interests the armies of the various Native States." He (Major Gowan) would leave the task of arguing out the many important points raised by the lecturer to those who had longer, but, above all, more *recent* service with native troops than he could boast of; but he would solicit the Chairman's permission to read an extract from a service paper, testifying to the general good work done by native officers, and urging that in any scheme dealing with the interests of this body, "great caution should be observed." Major Gowan then passed on to a subject very closely connected with the one introduced by Major Young to the meeting. It was that which related to the "numerical strength, organisation, training, &c., &c., of the various units of the Russian Army, and also the study of the individual character of the Russian soldier." Whilst he regarded with astonishment the fact that so many British officers were profoundly ignorant, and many others supremely indifferent, to this particular subject, he could assure his military audience that whether we were destined to be engaged in the near future in a war with Russia, or whether we were about to enter some such position with regard to that huge nation in arms known as "the Russian Empire," as France and Germany relatively occupied in Europe, English officers in India might soon find themselves either the foes or the neighbours of a body of men as intimately acquainted with every detail of each branch of the British service as the German officers were found to possess of the *real* state of the French Army in 1870—an acquaintance which evoked the bewilderment and temporary ruin of France and the amazement of the whole of Europe.

Major Young, in reply, said: As regards the exclusion of the Madras Army, I would only say that my paper was written almost entirely with reference to the Bengal Army; the allusion to Bombay in the 49th para. is scarcely more than accidental. If Madras is able to furnish a few more such battalions, too, it will be only so much the better. There was, of

course, no desire to exclude any good troops, from whatever part of India they might be obtainable. The same objections were made in different words by several speakers, and it will save time if I summarize them.

First.—The objection that the speakers would be sorry to see the native officer abolished. I can only say that I never suggested any such abolition. I never proposed at most more than to reduce about one-third of the existing number while improving enormously the prospects of the rest, and of the whole service generally.

Second.—The objection that taking away such an inducement as the commission would have a very bad effect throughout the army and the country. With this view I entirely agree, but not only, as I have just said, did I *not* suggest any general taking away of such an inducement, but I expressly said that I held very strong views that much *better* inducements in regard to a military career generally ought to be given to really capable and trustworthy men than now exist. Take the prospect now held out to our present non-commissioned officers and sepoya. There are 51 existing regiments in question, and these, therefore, have 816 commissions as jemadars and subadars to offer. We all know what sort of prospect to a really capable man *that* holds out : all he can look forward to at best after many years' service is a position in which he is commanded on every occasion by the most junior lieutenant (however incapable the latter may be), and can command nothing larger than a company. Now in place of these 816 unsatisfactory commissions, what I have proposed amounts to this : (1), 160 commissions (in 8 Irregular regiments) with prospects of military advancement generally as good as those of any British officer. These commissions are meant for really capable men, and after a certain preliminary period with the affiliated 2nd battalion ; (2), 360 commissions (in thirty 2nd battalions), just as good as the present ones, and better in so far as there would in these battalions be fewer British officers to interfere with and supersede them ; (3), 260 pensions on Rs. 15 a month ; and, I may add, (4), considerably improved pay and position to 1,600 out of the whole 2,400 havildars while in that grade. I think it can scarcely be argued that these are not considerably better prospects and inducements than are offered by the present 816 commissions, and if that is the case, this objection falls to the ground.

Third.—The objection that our existing native officers have very many good points, are most trustworthy, very capable, and will in time be made still more so. All this I most cordially endorse ; but I have shown in paras. 15 and 16 of the paper that it is *not the point*. I should be much distressed if it should be imagined that I thought in any way less highly of our native officers than anyone here present, or proposed to abolish them ; I can only emphatically deny anything of the sort. The best proof I can give is the fact that I am actually proposing the advancement of a large proportion to positions of real trust and responsibility in place of the indifferent and entirely subordinate ones they now hold. The point, however, is that the reason why the native officer is not wanted in a certain number of special battalions intended for a special purpose is, not any deficiencies on his part, but the fact that the sepoy will attempt and succeed in things under a boy English officer of two years' service, which he would not attempt, much less succeed in, under a perhaps far more really capable native officer of, say, 20 years' experience ; and especially is this the case when the sepoy has seen that native officer commanded on every occasion during all those years by a British officer. Colonel Crookshank asked if a native officer were not fit to command a company, how was he to be fit to command more. I never argued that he was not fit to command a company, but that his fitness had nothing to do with the point in question. I may add that if you want to get sepoyas to look up to, and rely upon, and follow a native officer as they now do a British one, the only *chance* of doing so is

to put that native officer into a position where he will not be subordinate on all occasions to a British officer. *Fourth.*—The objection that the proposed opening in a Irregular regiment for capable natives is an altogether insufficient and unimportant one. This objection has, I think, arisen from a misconception. In a short one-hour paper one cannot do full justice to every point, and thus it has been imagined by some that such Irregular regiments were meant to be merely ornamental, to be kept quite in the background, see little service, and so on. Nothing of the sort was intended. I think such regiments would probably see service oftener than any others, they being few in number, and I expect likely to prove very first-rate "rough-and-ready" corps, and most useful. With the single proviso against their being brigaded with British regiments, there need be no other limit to their employment, and possibly even the divisional regiment of each division of the army corps might be one such Irregular regiment. While as regards the openings so afforded to individuals there would ~~then~~ be no longer any reason why such men as Colonel Crookshank has named should not have command of a regiment, or even rise still higher in time if in such command they showed themselves capable for it. I do not therefore see how such an opening can be held to be insufficient or unimportant. *Fifth.*—The objection mentioned by so many that the 2nd Battalion would deteriorate, and that no officer or man would care to serve in it. This objection was, of course, that which naturally occurred to me at once on drawing up the proposal, and a point to which I gave much thought. I think I have fully answered it in page 139 of the paper. I may add that the 2nd battalion need not necessarily be a battalion "which never went on service" (as one speaker called it), as it might just as well be sent on any or all of the expeditions such as our native regiments have been sent on during the last twenty years, as the 1st battalion; but only that it cannot be sent against a European enemy until it is first brought up to the full strength considered necessary for that purpose, by the addition of the necessary British officers and 180 men from the Reserves. But the main point is that no one, either officer or man, would have any such ground of objection to service in such battalion, since all would be there merely for a time, until they passed into the 1st battalion. On a captain, for instance, being promoted to major in the regiment, he being the junior of the three majors would probably have to go to the 2nd battalion for a year or two until he was again able to return to the 1st battalion as its major; and similarly with all ranks. All recruiting being left to the 2nd battalion, and all vacancies in the 1st battalion filled therefrom, would cause a constant flow into the latter from the former in all ranks: in the case of native officers the same flow upwards would take place, but its direction would be into the affiliated Irregular regiment. Regarding Colonel Crookshank's objection as to the whole number of our regiments being possibly required on such a service, I do not exactly see how that is any argument against an attempt to properly equip, half, at all events, of them to begin with. I have said in para. 49 of the paper that I do not mean for a moment to imply that 120,000 men are *all* that would be required in such a contest. But to provide for a force of that amount from existing materials and without increased cost is, at all events, something to begin with, and more than we have done yet. Taking our whole number of regiments available for the purpose at, for example, ninety from all three Presidencies, I have shown how out of these forty-five can be got fitly equipped for such a service without any increased expense. *More cannot be done without increased expense under any scheme;* but plenty more can of course be done if the financial considerations be set aside. To place the other forty-five battalions (the 2nd battalions) on the same footing, and to raise others (3rd battalions) in their place, will of course cost money, but not more, probably less, than will occur under any scheme, whenever the whole

number of our existing battalions have to be sent beyond the frontier. Regarding the suggestion to substitute the double-company command system, though I allow it would be a little better than our present system, in that the British officers would have definite commands distinct from those of the native officers, still there seems to me conclusive arguments against it as a finally satisfactory arrangement, and these I have fully given on page 130 of the paper. Such a system would simply perpetuate that counteraction of British and native officers to which I have referred on page 141. Colonel Crookshank also said that, under the present system, if a regiment lost all its British officers, it would still have some native officers left, while under that proposed it would have no officers left of any sort; but surely for such a comparison you must suppose the same number to be killed in both cases; and if the same number is taken in each case, it would still leave the proposed battalion with seven British officers, and this of course is the chief reason for having so many. I did not quite follow Major Gaselee's objection regarding the impossibility of getting rid from regiments of the plethora of senior officers. Surely, if you provide 25 appointments better paid than the command of a regiment, you must thereby ensure that amount of relief to the regiments, and the latter must be, at all events, considerably benefited over the present state of things in which there is no such outlet. The only other point which I need notice is, what Captain Beley said about the putting British officers in command of companies being a "retrograde" movement; but this contains the most important point of all. Now, first, I am totally opposed to the idea that any adoption of anything which our forefathers thought good must, *ipso facto*, necessarily be retrograde. There is a great deal too much of that sort of sentiment in the army at present. As a rule, anything of the sort was the practical outcome of twenty times the amount of hard, practical experience in the field that any of our generations have had, and we require to look with extreme suspicion on any suggestion tending in an opposite direction to the conclusions which an earlier generation of soldiers in India, with far greater practical experience than our own, eventually arrived at. Some might say that this may be held to argue against myself, but our present organisation has grown up accidentally, *not* as the result of any experience of the organisation required by war, but as the result of financial necessities, and is *not* in accordance with the practical experience of an earlier generation, but the reverse. The old "Regular" and "Irregular" systems each had its special and distinctive good points; in the former, the British company leader was everything, the native officer a mere cypher; in the latter, the native officer had full, or nearly full, scope. After the Mutiny the Irregular system came to be thought the only good one; but whether it were so or not we did not leave it as it was; we went on gradually adding British Officers to it, until we have now arrived, more by accident than by deliberate intention, at an organisation which is neither one thing nor the other, but a compromise between the two systems, and which has, in my opinion, lost the good points of both of them. We have at one and the same time too many British officers and too few: too many to give the native officer any real scope, too few for entirely British leading. Nor is this all: we have at the same time gone on educating up the native officer until his old position as an insignificant cypher (as in the old Regular regiment) is no longer a possible one. Thus two distinct causes are now operating in the same direction, and making the British and native officer counteract each the especial advantage of the other. The more (with such an organisation) you go on increasing the number of British officers, and the more you go on at the same time giving the native officer higher training, the more you are increasing this counteraction and marrying all the benefits thereby obtainable if only the two were given separate spheres of action.

I maintain that if in any regiment you are going to have native officers commanding companies *at all*, then the moment you add a single British officer below the position of wing commander, *you do harm*: the requirements of the present day are, I think, all the other way, and it is for this reason that I have suggested for Irregular regiments now, instead of the three British officers of the old days, no more than at most one, and by degrees I would let his place too become that of a native officer. Similarly, if in any regiment you are going to have British officers taking command in action of the smaller units *at all*, then the moment you put native officers nominally in command of those units, *you likewise do harm*. At present you have got in every regiment no less than *five* British officers, who, when that regiment is advancing into action, have no place or business except to take command of—the native officer's command—the company; and as British officers are not in the habit of standing idly by and seeing a native officer lead in a fight, you see in every direction, with hardly an exception, the native officer pushed aside at the supreme moment and practically superseded. What sort of feelings must not this arouse in the mind of a capable native officer? and the more capable the man the worse he will feel it. We cannot go back to the state of things under which the native officer knew nothing and was a respectable and respected cypher; therefore, for those regiments in which we *must* have the units led in action by British officers, *vis*, those we are going to brigade with British regiments against Europeans, the only course is to have no native officers. The place of the highly-trained native officer of our day is not there at all, but in a regiment where he has free scope for his new powers; and this regiment may be used in the same contest, only not brigaded with Europeans. If this be retrogression, then most certainly to this extent I would “retrograde.”

General Watson, who had presided at the meeting whereat Major Young delivered his original lecture, then closed the discussion. He said: I will commence by drawing your attention to para. 53 of the lecture we are discussing. It runs as follows: “Our present organisation is neither the ‘Regular’ nor the ‘Irregular’ system, but a compromise between them, and it has the fault of all compromises. Under it the native officer does not get full scope, nor (as I have shown) the British officer either. Each, in my opinion, counteracts the good points of the other. Why then not separate them to some extent?” With the principle laid down in this para., which is the basis of all Major Young’s arguments, I most fully concur. I have maintained it for years; but whether by separating the two sets of officers we can improve the efficiency of our army or not, is a grave matter for consideration. If we can, then how we can do it to the best advantage with the least expense. and with due regard to the vested interests of the Native Army, are matters for all of you, gentlemen, to give an opinion on. I quite agree with what one of the speakers has said, *vis*, that the improved and improving education of both classes of officers increases the difficulty of working them harmoniously together. With Major Young’s proposal to create a second battalion to play a minor part in all things I entirely disagree. I am sure that such a battalion would degenerate into a gigantic and expensive dépôt, and nothing more. I will offer for your consideration another plan. We have at present in two native regiments 16 European officers and 32 native officers. Why should we not throw the 16 European officers into one battalion, and all, or at least 20 native officers, into the other; let them fight side by side and in brigade with British troops. I will answer for it that the native-officered battalion will *in time* be fit for the work. I point to the service done by some regiments of the Punjab Infantry in the Mutiny. They had never more than three European officers with them—

often only one—yet they fought side by side with British troops day after day, week after week, and month after month, and finally vied with our own Highlanders for the post of honour in the breach; their companies were led by native officers who had never been dominated, so to speak, by a body of European officers; they had acquired the independence and self-reliance of real company officers, and their sepoys followed them everywhere. Such native officers may be rare to find now; for since the re-organisation of the Native Army in 1861 they have been dominated, as I say, by European officers; but we might create them again in a few years by giving them real work to do, and in regiments of their own, with only one European commander and, perhaps, a European adjutant. There are many other points in the lecture which I should like to criticise, but it is too late this evening to say more.

The meeting then closed with a vote of thanks to General Leslie for having presided.

THE OFFICERING OF NATIVE REGIMENTS.

The following letter has been addressed to the *Times of India* :—

SIR,—May I ask you kindly to correct a misapprehension in your notice of my paper on the Officering of Native Regiments.

In that notice you say (1) that I evidently consider "that Sikh and Goorkha regiments are alone capable of crossing bayonets with Russians;" and (2) that I advocate "having fighting and non-fighting regiments;" and I should be very sorry that it should be thought that I agreed to either of these propositions.

No. 1 is easily disposed of by a reference to para. 48 of the paper; where it will be seen that the Hindustani regiments, equally with the other two classes in question, are expected to give their due proportion for the first line; each class being in fact indented upon in exactly the same proportion, *vis.*, to the extent of one first battalion (for first line), and one second battalion (for second line) from every pair of *existing regiments of the class*.

Again in para. 49 I suggested "Bombay at all events" finding 15 more such regiments, and these of course would *not* be Sikhs or Goorkhas; the words "at all events" meaning that probably Burmah and the Eastern frontier would fully occupy Madras, and that the defence of the North-Western frontier must be expected to fall wholly on Bengal and Bombay.

My remarks throughout, as to any particular classes of troops, had merely this effect, *vis.*, that if such and such measures were adopted, such and such results might be expected from, at all events, certain classes of troops—those that I knew. But this was not meant to imply that no similar results were to be expected from others which I did *not* know.

As regards No. 2, you say rightly that to have fighting and non-fighting regiments would be a grave mistake. But it is quite another thing to have two battalions of one and the same regiment one on a war footing and the other on a peace footing; for in this case no individual man remains stationary in the latter.

Undoubtedly, if expense were no object, it would be best to have all on a war footing. If this is possible—well and good. But if not, then some "second line" becomes a necessity. The question of the expense has forced all continental nations to have a second line of (cheaper) troops on a peace footing; and India is now beginning to feel the same want by coming under the same conditions.

Yet among such nations the troops of the second line have never been con-

sidered "non-fighting," even though in their cases they form, as a rule, *a separate force*, and are thus without that regular healthy regimental flow of individuals from second battalions into first battalions of the same regiment here proposed. The same argument might be applied, with even greater force as regards garrison batteries of artillery; yet none have ever considered them "non-fighting" corps.

I would add, in conclusion, that the proposal as to second battalions is not by any means the main proposition of the paper, but merely an endeavour to obtain the latter without additional expense, and to do the best possible *with existing materials*. The main contention is—

- (1) That our present organization has lost the good points both of old "Regular" organization and of the "Irregular," and has become a compromise between them which should now be abandoned.
- (2) That those battalions which are to be brigaded with British regiments against Europeans should be made *Regular*.
- (3) That a small proportion of regiments (not for such brigading, but for fullest use in all other parts of the business) should be made purely *Irregular*.
- (4) That the changes of the times now require that "Regular" battalions should have no native officers, and "Irregular" ones no British officers, or at most no more than one.

The discussion on the paper which took place on the 3rd instant will, I trust, shortly be published, and its perusal will clear up many points necessarily briefly dealt with in a short paper on a big subject, and thus liable to misconception.

G. F. YOUNG, MAJOR,
Assistant Quartermaster-General

A SHORT HISTORY OF MILITARY UNIFORM.

By Colonel F. H. TYRRELL, *Madras Infantry.*

We purpose in this article to give a slight sketch of the origin of our uniform dress, the fashions which have prevailed in it from time to time, and the changes which have been introduced to suit the taste of the times and to match the alterations in the costume of the civil population. Our task will thus be confined to a history of military dress during the past two hundred years, but by way of introduction to our subject we will give our readers a very brief notice of the successive styles of martial apparel which have prevailed in the civilized world since our glorious profession was first adopted, and the noble art of war first invented.

The earliest military dress was naturally the rude defensive armour which must have soon followed upon the invention of the sword, the spear and the bow. We read of helmets of brass, and coats of mail (probably scale mail) as worn by the Israelites and the Philistines in their wars: and Homer's Grecian and Trojan heroes are described as wearing breastplates and greaves, and helmets surmounted with nodding plumes of horsehair. The epithet "Brazen" is generally applied by the poet to their armour. From the fragments of ancient Grecian sculpture remaining to us we are well acquainted with the graceful designs of the armour worn by the first champions of civilization and liberty; the nestly-shaped helmet with its large curved comb, something like that of an Italian heavy cavalry man of modern days; the close fitting leathern jerkin stiffened with scales of brass or steel; and the large round shield. The troops of the various states seem to have been distinguished by some device on the shield, for we read that in a battle in the Peloponnesus, the Sicyonian contingent being routed by the Argives, the Spartans advanced to their rescue, and as they advanced they picked up the large shields of the slain or fugitive Sicyonians which had an S on them. The Argives, thinking that it was the men of Sicyon returning to the fight, stood firm; and the Spartan Captain called out "By the twin Gods, ye Argives, these S.S. will deceive you" and charged, but the odds of numbers were against him, and he and most of his men were slain. The dress of the Roman Legionaries was similar to that of the Greeks, but the crest of the helmet was not so high, and the shield was oblong instead of round. They seem also to have worn a short cloak of a uniform pattern and colour. The savage nations of Northern Europe, such as the Gauls and Germans, wore wolf-skins and bear-skins, the grinning heads of which adorned their casques; and a favourite decoration of theirs, or more particularly of the Scandinavian warriors, was a real or imitated pair of wings springing from each side of the helmet—generally those of the eagle or raven.

In the dark ages, after the institution of knighthood and the laws of chivalry, armorial bearings came into fashion, and a warrior was distinguished by his badge like a Red Indian by his totem. This badge with its motto was painted on his shield, emblazoned on his banner or pennon, embroidered upon the surcoat which he wore over his armour and on the housings of his horse. The origin of these heraldic devices was no doubt the necessity for distinguishing from one another men who were so "locked up in steel" that they were otherwise undistinguishable. Some simple badge was generally adopted as a national distinction: the red cross of St. George, for instance, sewn upon the breast of his coat, distinguished an English soldier, in the middle ages. The Mahdi, who is now troubling the Soudan, has, we are told, some such primitive way of distinguishing his followers—a lozenge-shaped piece of blue cloth tacked on to the back and breast of the ordinary Arab shirt. Heraldic bearings were soon supplemented by livery, the precursor of modern uniform: for the latter was at first nothing but the livery of a monarch. The barons and knights who led their own retainers into the field dressed them all alike, and they generally wore their master's crest in a badge upon their sleeve—a custom now quite discontinued.

Bodies of troops raised for the household service of a monarch were next put into that monarch's livery; and this was the beginning of uniform; the practice spread rapidly with the establishment of standing armies. Our own company of Yeomen of the Guard, commonly called Beef-eaters (Buffetiers), supposed to have been raised in the reign of our Bluff King Hal, is perhaps the earliest example of this kind: though the Swiss Guard of Henry of Valois is usually quoted as the first instance of troops being dressed in uniform.

The revolution in military matters caused by the introduction of gunpowder and the gradual decay of the Feudal system led to the establishment of a class of professional soldiers, and to some attempts at organization; and troops were now permanently formed, first into companies and next into regiments. Coats of buff-leather succeeded to steel armour, and the officers of a regiment or company wore sashes of a uniform colour. This was naturally in most cases the colour of the livery of their commander. In the thirty years' war we find Wallenstein issuing an order that none but red sashes were to be worn in his army. The same General had for his own escort a troop of fifty Life-guards dressed in scarlet coats. But the earliest attempt at uniforming troops on a large scale seems to have been made by the Ottoman Turks. During the fifteenth and sixteenth centuries they were a leading military nation, and their influence can be traced in many instances in our European armies. Military music was in a great measure copied from their "Tabal Khana" or Band; and the French word "Tambour" testifies to the source from whence the drum was adopted into the armies of Europe. The cymbal, and perhaps the fife, were also taken from them, and up to comparatively recent times the combination of a standard and musical instrument called "Turkish Bells" was part of the furniture of British military bands. The example of the Turks also

acted on the European nations in more important matters, and the method of sapping up to a besieged town by trenches and parallels was learnt from them by French engineers at the siege of Candia : though the pupils soon surpassed the masters. They saved an immensity of time and labour by substituting zigzag approaches for the network of little semi-circular trenches with the ends over-lapping, by which the Turks worked forward. At all events, their Sipahis, Topjis, and Janissaries were the first example of a standing army in Europe, troops kept always on foot, regularly paid, clothed and rationed by the State. These troops seem to have been uniformed in some way, and their distinctive dress is often alluded to by Turkish writers. The Janissaries wore caps of white felt, the different ranks being distinguished by a differently shaped cap. In the narrative of the Turkish writer Evliya Effendi he says that the Vazir trying to gain over the mutinous Janissaries after their assault on Sultan Othman in the garrison mosque promises them that "instead of the blue cloth of Salonica, they shall in future wear fine scarlet cloth." Baron de Tott, who tried to re-organise the Turkish Army in the last century, says that in his time every Janissary received annually from the State a white felt cap, a pair of red shoes, and enough blue cloth to make a pair of wide trowsers (Shalwar), but their coats, though of one uniform cut, were of any colour. The cooks who ranked as officers in the corps wore black leather gowns ; that of the head cook of the corps was studded with knobs of silver. Evliya Effendi says the master-cooks used to wear gold caps (Zar kulah).

The Ajam Oghlans (foreign boys) as the conscripts were called before they were drafted into the ranks, wore red jackets and caps.

The Sipahis or cavalry were divided into two corps, one of which carried red, and the other yellow standards ; and their dress seems to have been a yellow turban and a red kaftan. Bishop Newton, in his work on the prophecies, thought that he had discovered the prototype of the "breast-plates of fire and jacinth and brimstone" of the horsemen in Revelations in the dress of the Turkish Sipahis, whom he describes as wearing " martial apparel of red and yellow." The Sultans of the Ottomans had also some bodies of household troops who wore quaint and gorgeous uniforms. The Gunalties or Gyonelleis wore the Hungarian dress : the Bustanjis (Park Rangers) who guarded the Palace and formed a regiment four thousand strong wore red caps and dress : the Zulfchis (Ring-letters) had scarlet helmets with false ringlets fastened inside them : the Solaks (Left-handed) bowmen of the guard wore metal helmets with fan-shaped crests of feathers—probably a reminiscence of the Roman helmet. They were called Solaks because those who marched on the right side of the Sultan drew their bows with the left hand. The Janissary officers wore heron's plumes in a copper plumecase in front of their caps. The stiff upright plume (Jigha) was first introduced into Europe by the Turks, and the historian Knolles mentions the surprise with which European envoys saw these kind of plumes worn by the Turkish troops at Buda. At that time, the era of the 'Thirty years' War none but drooping or falling plumes were worn among the Western nations. The same writer says "the Turk's horse-

men are all naked men," meaning unarmoured, for though the Saracens, the Mamelukes of Egypt, and the Musalman horsemen of India used chain armour in those days to a great extent, the Osmanly Turks never adopted its use, or at all events were the first to lay it aside. Chain armour they wore but little, and plate armour not at all.

When the Turkish horsemen overthrew a German knight in a skirmish before the walls of Vienna at the first siege, they could not get at him to kill him through his plate armour, nor could they unfasten it, else the knight's days had been numbered. They carried him as he was before Sultan Suliman, who granted him quarter, and he then touched one or two rivets, and slipped out of his iron panoply to the admiration of his captors. But the arquebus-shot which laid the chivalrous Bayard low, sounded the knell of defensive armour in Europe, and soon all the cumbrous paraphernalia was laid aside except the helmet and body armour, which have indeed survived even to our own time. Regiments now began to wear this armour of a uniform pattern. The army which the Duke of Alva led across the Pyrenees through France to punish the recalcitrant Netherlanders was remarkable for the perfection of its arms and appointments. One Italian regiment in this army was equipped uniformly, through the liberality of its Colonel, in casques and corslets of damascened steel. These mail clad warriors were however beaten back from the ramparts of Alkmaar by the sturdy Dutch fishermen; the Spanish ensign who topped the breach only to be hurled down again reporting to his astonished comrades that the defenders were "naked people all of them !" as the phrase for unarmoured was in those days.

The buffalo-leather coat, tough enough to resist a sword cut, gradually superseded the cumbrous armour.

The first mention we have of buff-coats in England is the uniform of the corps of German arquebusiers whom the soldier of fortune Martin Swart brought over to assist the pretender Lambert Simnel. Their coats were embroidered and bedecked with ribbons, and their finery is often alluded to by contemporary writers. Shakespeare makes Prince Hal speak of "a buff jerkin" but this is probably one of his anachronisms, like his providing Falstaff with a pistol. In the Thirty year's War and the Civil Wars of the King and Parliament in England, buff-coats were the ordinary military costume.

Gustavus Adolphus of Sweden who invented cartridges and maintained a stricter discipline in his army than had hitherto been the custom in Europe, seems to have had regiments dressed in uniform, for we read of the Yellow Regiments and the Blue Regiment of Swedes distinguishing themselves at the battle of Lutzen. In the Civil Wars of England about the same period we read of regiments in the livery colours of the noblemen who had raised them. Cromwell seems to have been the first, however, to grasp the idea of one uniform for the whole army. He dressed his troops in the red which has ever since been our national colour. His famous Regiment of Ironsides were nicknamed "Lobsters" from their being arrayed in scarlet and steel. After his death his splendid army was disbanded, but the red uniforms were

continued in Charles the Second's new regiments. The Royal Scots or Dumbarton's Regiment was really older than any of Cromwell's regiments. It was raised for volunteer service under Gustavus Adolphus in Germany. The East-Kent Regiment of Buffs is, we believe, older still, having been raised to help the Netherlanders against the Spaniards. They are said to have got their name of Buffs from their accoutrements of buff leather. Both these regiments were taken into service by Charles the Second and came back with him to England at the Restoration. The Second and Fourth Queen's and King's Regiments were afterwards raised to garrison Tangiers when Charles received that place as part of the dowry of Catherine of Braganza. The Queen's Regiment is said to have been granted the Paschal Lamb as its emblem for its Christian services against the infidel Moors there. The Musketeers of all these regiments wore scarlet coats, broad-brimmed Spanish hats with feathers, knickerbockers and long boots. The pikemen wore the white doublet of the old English Yeomen with steel morion and corslet, and gauntlet gloves. All infantry companies were in those days divided into musketeers and pikemen; "shot and pikes," as they were technically called. The poet Marlowe makes his hero King Tamburlaine (Tamerlane) say to his son:—

"Boy, hast thou seen a peal of ordnance strike,
"A ring of Pikes, mixed up with Shot and Horse?"

When the pike was superseded by the bayonet the distinctive dress of the pikemen disappeared also, and men of the battalion were all uniformed as well as armed alike.

Charles the Second's Life Guards wore buff coats on parade, but probably scarlet was their Court dress. The gallant and ill-fated Viscount Dundee was Captain of the Scotch troop of Life Guards and the "bright scarlet cassock" which he habitually wore was probably their uniform. His putting on a "sad-coloured" buff coat over it on the morning of the battle of Killiecrankie was believed by the superstitious Highlandmen to have been an omen of his approaching fall. The Earl of Oxford's Regiment of Horse, also raised in Charles the Second's reign, wore the blue livery of their commander, and were for long the only corps in the English army which was not dressed in red. They wore blue coats and blue cloaks.

Uniform had already become general along with standing armies on the continent. Louis the Fourteenth, Le Grand Monarque, dressed his newly raised regiments in white. Later on, it became the colour of the uniform of the Spanish, and Neapolitan troops of the junior branches of the house of the Bourbon. It was also adopted as the colour of the great Imperialist Army which marched under the banners of the House of Hapsburg. The Elector of Brandenburg dressed his troops in the dark-blue colour which the Prussians still wear, and the Swedes also wore blue. Peter the Great put his new Russian Army into dark green uniforms, and they too have retained their colour to this day.

The military dress of the soldiers of these standing armies closely approached in pattern the civilian dress of the time. The Spanish Sombrero had just been converted into the three-cornered hat by

looping its brim up to the crown, and this *chapeau tricorne* was for more than a century the universal military head-dress of the soldiers of Europe. A cockade or bunch of ribbons in front served for ornament instead of a plume and denoted the nationality of the wearer. Thus in England the black cockade was the emblem of the House of Hanover and the white that of the Stuarts. Cockades were worn by none but military men or by the servants of officers, and they distinguished the otherwise unadorned beaver of a soldier from that of the civilian. No sooner was the fashion of uniformity started than, like most hobbies, it was ridden to death. A race of martinets and military pedants sprang up, especially in Germany, among her petty princelings whose sole object in life was playing at soldiers : drilling, dressing, furbishing up their unfortunate troops and inventing new methods of torturing them into uniformity. One of these was hairpowder : another the queue or pigtail. The great object was to make every soldier in a battalion not only to move together but to look exactly alike so that the whole might present the appearance of some monstrous mechanical toy. By powdering, curling and clubbing the hair and trimming the moustaches, every man in the ranks was made to appear the exact presentment of his right or left hand man. This hair-dressing nuisance was not abated till the commencement of the present century, when the French Revolution suddenly shewed Kings and Captains that common human beings were perhaps not intended solely for their toys. The black ribbon which formerly bound our soldier's queues, is still worn attached to the back of the collar of one of our Infantry Regiments, the Royal Welsh Fusiliers.

The uniform of the soldiery of the times of Marlborough and Charles the Twelfth consisted, besides the universal three-cornered hat, of a loose comfortable coat with long cuffs and skirts reaching to the knees ; a waistcoat with skirts which covered the hips ; and knee-breeches and stockings over which long gaiters of cloth or leather reaching above the knee were buttoned ; to these latter articles of the dress the slang term "spatterdash" afterwards came to be applied in England. The coat, waistcoat, and breeches were generally all of the same uniform colour. The coat was lined with some contrasting colour and this of course shewed when the collars were turned back and the cuffs turned up as they always were in fine weather. This was the origin of "facings." The colour of these facings was often taken from the livery of the Colonel : the Royal, King's, and Queen's Regiments in the British Army wearing the scarlet turned up with blue of the Royal livery. The coats had pockets outside on the hips, the slits of which were trimmed with braid or lace ; the long cuffs, when turned back, were kept in their place by buttons and loops of braid ; and those ornaments are still retained in the dress of modern European soldiers, though the use of them has long ceased. As long as the coat was worn, stripes of lace on the outside of the hips showed where the pockets of its predecessor had been : and the slashed cuff with its button and false loops was till lately worn by all our Regiments of Infantry and is still preserved in the tunics of the Foot Guards. Another survival of the old coat was the white turn

back on the skirt of the coatee with the button in the centre: a scanty memory of the fashion in which the ample skirts of the old coat were fastened back to leave the knees of the wearer free for the escalade. The old-fashioned coats served as a great coat as well: in rainy or cold weather, the collar was turned up to the ears, the cuffs let down over the hands, and the coat being buttoned up in front covered the limbs of the soldier to his knee, below which they were protected by the gaiters. In barracks the coat was never worn; the men lounged about in their sleeved waistcoats, and all fatigue duties were performed in them. Off duty, and sometimes on duty, in fine weather, the men wore long white stockings: at other times long gaiters.

The Cavalry were dressed very similarly to the Infantry—only with jack-boots instead of gaiters, and they had generally gauntlet gloves, and the Dragoons were similarly dressed. They were at that time mounted Musketeers, or troops who marched on horseback and fought on foot: they were armed like the Infantry, and in the British Army the Dragoons were the first troops who were equipped with the bayonet. The three Arms of the Service in Turenne's and Marlborough's days, and for long afterwards, were Horse, Foot, and Dragoons.

The dress of the officers was similar in fashion to that of the men: their hats were bound with gold or silver lace, and their coats and waistcoats were also richly laced: their sword hilts and sword knots were of gold or silver. All this finery was not peculiar to uniform, but was part of the fashionable dress of gentlemen of the time, from which the military dress only differed in the uniformity of its cut and colour. Some regiments wore gold lace, other, silver—the lace, like the colour of the facings, being usually a matter of regimental arrangement. Officers also wore gorgets and sashes for the sake of distinction. The gorget was the last relic of defensive armour. The cuirass was almost entirely laid aside in Marlborough's time, being worn by general officers in full dress, and the portraits of kings and nobles were still painted in full suits of armour, though they never wore it in ordinary life. The helmet had quite disappeared at the same time: the gorget, however, kept its ground, and was worn of gold or silver as the distinctive badge of an officer. White cravats of silk or lace were worn by officers in uniform. When the French army was surprised by the Allies under William of Orange at Steenkirk, the gentlemen of the French Horse Guards (*Maison du Roi*) came spurring to the front with their lace cravats tied anyhow: and this circumstance set the fashion of a studious negligence in tying the cravats of officers, such ties being nick-named "Steenkirks."

This dress which we have described taken all round was perhaps as comfortable a dress as was ever worn by regular troops, and was certainly very superior to the uncomfortable and unserviceable style of dress which came into vogue a century later. The three cornered hat sheltered the head, the clothes were roomy and comfortable, and therefore wore well, and the knee breeches and gaiters were convenient for marching in. The quality of the soldiers' clothing differed much in different armies and regiments; but it was by no means equal to what

it is in modern times. Colonels of regiments clothed their men, receiving a certain sum per head from the government for doing so; in fact a Colonel farmed his regiment and made all he could out of it. This system was the origin of Colonel's off-reckonings—the off-reckonings representing the average profit which a Colonel could calculate on making out of the clothing of his men. Marshal Saxe incidentally tells us in his memoirs of a scene witnessed by him at the battle of Belgrade when he was riding aide-de-camp to Prince Eugene. Two German battalions in line had been surprised and charged by Turkish Cavalry, every man in the two battalions being sabred within a space measuring not more than forty yards from front to rear. The first care of the Austrian leaders on recovering the ground was for the clothing of the fallen men which was the property of the Colonels. Sentries were posted at the four corners of the ground and fatigue parties set to work to collect the coats, hats, and shoes into heaps.

There were some Colonels who were at the same time wealthy and generous enough to care more for the appearance of their regiments than for filling their own pockets; others looked on their regiments simply as a commercial speculation, paying down a handsome sum for the command with the expectation of obtaining good interest for their money, not only by making a profit out of the men's clothing, but in a variety of other ways, which would be thought scandalous and dishonest now, but which were looked on as legitimate then, or were at least winked at by common consent.

By the end of the seventeenth century every civilised power in Europe possessed some kind of a standing army except Poland. Even the Russians had been partly cajoled, partly terrorised by Peter the Great into throwing aside their Kalpaks and Kaftans, and adopting the dress of the European nations: even to the shaving of the chins and powdering the locks of the Muscovite soldiery.

The Poles alone maintained their old manner of warfare and their old armament and dress, their lance-wielding horsemen wearing the Oriental Kaftan and the square cap which was their national head-dress, which has since become familiar to all the armies of Europe, and has actually survived the old three-cornered hat so universally worn once. It is related that when the Turkish Grand Vazir, Black Mustafa, was at Buda after his disastrous defeat by the Poles and Germans under the walls of Vienna, a Jewish merchant, who was about to start for Belgrade, came to take his leave. All the roads being infested by the straggling fugitives from the Turkish army, the Pasha offered the merchant an escort to accompany him; but the Jew laughingly drew out a Polish horse man's Czapka (square cap) from under his robe, and said that he had only to shew that, and any number of plundering Turks or Tartars would fly far and fast from it. On which the Vazir sighed and said: It is indeed a true proverb, "that they whom God has smitten with panic, fear even the Jews."

The square lance cap did not find its way into the uniform of other European nations, however, till a century later. The first innovation on the three-cornered hat was the Grenadier cap introduced along with

that description of troops about the year 1670. The wars of that time were eminently wars of sieges. Vauban and Cohorn had by their improvements in military engineering made the art of fortification into a science : and methods were eagerly sought to break down the consequent superiority of the defence. Hence the institution of Grenadiers, who were picked men, the stoutest and bravest in the army, supplied with hand grenades to search out the covered ways and places of arms, and armed with hatchets to hew away abattis and palisades. Evelyn in his *Diary*, 1783, speaks of the new kind of soldiers just introduced into the British army called Grenadiers, clothed in red turned up with yellow, and wearing "caps with coped crowns like Janissaries." This cap was shaped like one half of a Bishop's mitre, or like half a sugar-loaf sliced down the middle, with the convex part in front. In the English army the cap was of blue cloth with the Royal Arms and the Regimental Badge embroidered on it. It was backed with scarlet cloth and had a white tuft at the top. Under the Kings of the House of Hanover the Grenadiers wore the badge of the white horse on their caps immediately above their foreheads. The Grenadiers' officers did not wear the cap, but wore hats like the rest of the officers of the regiment.

A picture of a British grenadier of the time of Fontenoy and Dettingen represents him wearing the cap described above, a scarlet coat with blue facings and lapels and white trimmings, a scarlet waistcoat with the flaps coming down over the thighs, blue knee-breeches and long white gaiters coming higher than the knee, and gartered below it. The wide skirts of his coat are looped back shewing a white lining. The old song of "the British grenadiers" says : "Then let us fill our glasses, and drink a health to those, who carry caps and pouches, and wear the looped clothes." The large pouch for hand grenades is carried at the side slung by a broad white belt over the shoulder, and another broad white belt round the waist carried the bayonet and the sword as well, which was for long, part of the equipment of the European foot soldier. Cross belts were introduced about the time of the seven years' war. They had only their appearance to recommend them, and a return was made to the original manner of wearing one waist and one shoulder belt not very long ago ; cross belts in fact came in with the tight coat and went out with it.

The English Life Guards wore the universal three-cocked hat, scarlet coats, white leather breeches and jack-boots. When first organised in three troops they were distinguished by the difference of the shoulder belts to which their musketons or carabines were slung. The King's troop had blue belts trimmed with gold. The Queen's green, trimmed with gold : the Duke of York's troop, yellow and silver. All the Dragoon regiments were similarly dressed. Light Dragoons were not thought of till the seven years' war, when some Regiments of Horse were made into Light Cavalry.

The Artillery was uniformed in blue turned up with scarlet, and trimmed with gold or yellow cord from its first organization as a branch of the service in the reign of William the Third. In the French Army

of the Bourbon Kings the troops of the "Maison du Roi" or Household Brigade were all dressed in scarlet. These were all corps of what were at first called Mousquetaires or Dragoons who served both on horseback and on foot, escorting the monarch on his progresses and doing sentinel duty within the precincts of the Palace. There were several corps, such as the Garde du Corps, the Mousquetaires du Roi, the Mousquetaires Noirs (who rode black horses), the Mousquetaires Gris, (who were all mounted on grays), the Grenadiers à cheval, &c They wore laced three-cornered hats, scarlet coats, white leather breeches and Jack boots. The regiments were distinguished by the colour of their horses and their facings and by gold or silver lace. They were weak in point of numbers, the privates were all gentlemen, and in some corps all noblemen.

The Infantry of the Guard, which was not included in the Maison, consisted of two strong regiments, the Gardes Françaises dressed in blue, faced with scarlet, the Gardes Suisses, dressed in scarlet, faced with blue. The troops of the Line were all clothed in white, with different facings and lace; the first regiment of foot, called the Regiment du Roi, wore white coats with bright blue facings and orange-coloured lace.

The Austrian army was very similarly dressed; their Grenadier caps were black with yellow mountings. They are said to be the first who introduced the wearing of bear-skin caps by Grenadiers.

The Prussian army was dressed in dark blue; the famous Regiment of Potsdam giants wore Grenadier caps, of which the front was a plate of white metal, backed with scarlet; blue coats with scarlet facings and silver lace, scarlet waistcoats, and white breeches and gaiters.

Frederick the Great it was who, from motives of economy, buttoned his men up tight in their coats and cut and trimmed the roomy skirts into a pair of swallowtails. In this way the thrifty king effected a saving of many thousand ells of blue cloth. His soldiers used to be called in jest "the short-skirted Prussians." Peter the Third, the madman who occupied the Russian throne during the short interval between the reigns of the two masculine Empresses Elizabeth and Catherine, was a great admirer of Frederick and of everything German, and he much disgusted the Russian soldiers by putting them into uniforms of Prussian cut; upon Peter's dethronement by his wife Catherine, the troops made bonfires of their Prussian coatees, and were allowed to resume their old loosely-made uniforms.

But the tight coatee gradually made its way into all the armies of Europe. The war of the Austrian Succession introduced the Hungarian horsemen and their national uniform to Western Europe for the first time. The chivalrous Magyars who shouted "*Moriatur pro rege nostro Maria Theresa*" flocked to wars against French and Prussian invaders clad in their national dress of Kalpak with stiff plume, embroidered jacket and pelisse, tight pantaloons, and the short half boots which became afterwards known as "Hessians." They were armed too with the crooked sabre carried universally by Oriental nations, and their tactics were those of their old Turkish masters, not of their new German overlords. They introduced the use of light cavalry

into Europe, which was still struggling with the old traditions of the feudal ages. Their example immediately led Frederick the Great to institute Hussars as a branch of the Prussian army : and his newly raised light squadrons were dressed and equipped in exact imitation of their Hungarian originals. Under dashing cavalry leaders like Seidlitz and Ziethen, the Prussian Hussars soon became more than a match for the Hungarians themselves ; whom they rivalled in dash and distanced in discipline.

Various accounts have been given of the origin of the hanging pelisse or slung jacket, which formed the most distinguishing characteristics of the dress of the Hussar. Equally doubtful is the derivation of his distinctive appellation, most writers deducing it from the "huzza" with which the Magyar was wont to prelude his headlong onset. Old writers speak of "the Turkish yawl" (Ya Allah ?) which heralded the charge of the Osmanlis, now corrupted into the familiar "yell : " and the word "huzza" certainly only appears in our literature about the middle of the last century, what time "the names of the Croat, the Pandour, and the Hussar," says Macaulay, "first became familiar to Western Europe." Its more modern modification of "Hurrah" was certainly adopted from the Russians during the Napoleonic wars, "the urras of the Cossacks" at first exciting as much astonishment among Europeans as did the wild shouts and "swarm attack" of the Hussars of Maria Theresa.

There is a common story that the origin of the dolman or hussar pelisse was as follows : A body of Magyar cavalry in the Emperor's service was surprised in camp by the Turkish enemy. The Hussars had only time to slip an arm through one sleeve of their jackets : and in this *dishabille* fashion (some of them, at least) springing to horse, they charged and routed the enemy. In remembrance of which notable exploit, says rumour, it was ordained that they should for ever wear one arm through the sleeve of their jacket only. But the real fact is that the fur-lined dolman was worn by the Hungarian as a protection against wind and weather, and when he had no immediate need of it, he let it hang from one shoulder as the most convenient method of carrying it : the modern Magyar peasant or shepherd on the banks of the Danube may any hot day be seen wearing his sheepskin jacket in precisely a similar manner. The word "dolman" appears to be Turkish ; and in the portraits of the Ottoman Sultans, published with Prince Cantemir's history nearly two hundred years ago, many of them are represented wearing an upper garment exactly like the Hungarian hussar pelisse.

The garment as introduced into the dress of European armies was richly braided in imitation of the splendid costumes which were affected by the Hungarian magnates and their retainers. The Kalpak (Turkish for cap) with its stiff upright plume or waving heron's feathers was also common to both Magyars and Osmanlis, but the latter wore a turban round it, which the former rejected as a distinctive sign of Muhammadanism.

The Janissaries wore a white "jelly-bag" hanging from their felt caps,

said by Gibbon and other writers to be in memory of the sleeve of the saint Haji Bektash, who stretched out his arm over the heads of the front rank to bless them on the first consecration of the corps to the service of Islam; and the same hanging bag may be observed in several of the head dresses depicted in the plates of Turkish military costume published in London in 1818.

In a portrait of the famous Prussian Hussar leader Ziethen in the Royal Gallery at Berlin he is represented in a crimson Hussar uniform, the jacket, pelisse and pantaloons all of the same colour, richly laced with gold: he wears a black fur Kalpak with a white plume, and is mounted on a gray barb, reining it in, apparently to reconnoitre the enemy. A companion picture represents Seidlitz, the dashing Cavalry leader, who rode down the French columns at Rossbach, in the uniform of the Prussian Horse Guards: large three-cornered hat, white jacket and black cuirass, mounted on his powerful black charger, he dashes along at full gallop, pointing with his gauntleted hand in the direction of the enemy.

The change in Cavalry tactics inaugurated by Frederick the Great introduced the use of Light Cavalry into all the armies of Europe. Some regiments of British Horse (very few at first and gradually more) were made into Light Dragoons. They were given helmets with a comb and horse-hair crest, made of metal or of leather, with white metal mountings, instead of the cocked hats worn by the Heavies: and they wore hessian or knee boots instead of the huge jack-boots which the Dragoons of the day delighted in.

The dress of these Light Dragoons was at first still scarlet, but after a time their uniform was changed to blue. For any British troops to wear blue except the Blue Horse (Oxford Blues, the present Royal Horse Guards) and the Artillery, was looked upon by the conservative English as a dangerous foreign innovation: and Sir Walter Scott narrates the surprise of the good people of Scotland at the blue uniforms and moustaches of the Hessian Contingent which was brought to Leith in 1745 to assist in quelling the rebellion of the Pretender. It soon became recognised canon of the laws of uniform, however, for the Light Cavalry of a national army to wear a different colour from the rest of the army: the British adopted dark blue: the Austrians dark green; the Russians and Prussians had regiments dressed in different colours. In the American War of Independence the loyalist American farmers and gentlemen who were driven from their houses by their rebel countrymen were formed into a regiment of Light Horse clothed in green. The American rebels dressed their troops, so far as they were dressed in uniform at all, in blue faced with buff.

The Poles and Croats in the Austrian army in the Seven Years' War had again introduced the lance into European warfare, and Marshal Saxe raised a regiment of Lancers for the French service who were dressed in exact imitation of the Polish Uhlans. The front rank only were Lancers, the rear rank Dragoons armed with carbines. The former were dressed in square caps and green kaftans with kamarbands, and loose trousers tucked into half-boots: while the Dragoons had crested

copper helmets with black horse hair mane, short-skirted green coats with red facings, and buff waistcoats and knee-breeches. This corps was raised as an experiment by Marshal Saxe, but it does not seem to have been a successful one, for it soon after disappeared from the French Army List. The dress of the British Infantry during the period of the American Revolutionary war was a scarlet swallow-tailed coat cut away in front to show the white waistcoat; white knee-breeches and black gaiters were usually worn. Shoulder knots began to be worn about this time, of worsted for the men and of gold or silver lace for the officers. The three-cocked hat was still worn and the Grenadiers had adopted the fur cap, which was made on the lines of their old sugar-loaf caps, with a convex front and flat back. The Highland dress was adopted into the English army about the middle of the last century. The Black Watch wore it as a Frontier Guard before the rebellion of '45, and were called the *Sidier Dhu* or "black soldiers," to distinguish them from the *Sidier Roy*, "red soldiers or regulars." When they were incorporated into the regular army they were given short scarlet coats worn open with waistcoats. They had blue woollen bonnets with dice bands of the shape now called Tam o'Shanter. The officers wore a single eagle's feather fastened into it with a brooch. All ranks wore the full Highland dress of plaid, kilt, sporran, and tartan hose. The gaiter seems to have been a later addition to their dress. The officers at first carried targets, and all the men had claymores in addition to their bayonets.

The Highland dress affords a most conspicuous and fortunate instance of the conversion of a national into a military dress: others may be seen in the Hussar uniform which was the ordinary dress of the noblemen and yeomen of Hungary: and the French Zouave costume which is the native dress of the Moors of Algeria.

We have already noticed the early adoption of uniform insignia and articles of dress by the Ottoman Turks; but they never improved upon their first attempts, and their example was not followed by any other Eastern nation. The only allusion to uniform which we can trace in Oriental literature is the epithet "*Palanginaposh*," "*Leopard-skin-wearing*" applied to "*Tufangchis*" (*Musketeers*), and "*Jazairchis*" (men with long muskets upon rests). This epithet probably means that their bandoliers were made of leopard-skin; an old custom of which we sometimes see a survival in the belts worn by peons or chuprassies in India. In the Urdu work called the *Arayash-i-Mahfil*, reference is made to a corps in the service of the Emperor of Delhi in the battle fought with Nadir Shah at Karnal, called the *Kamal-posh*, i.e. "*woollen-wearers*." The peons, and afterwards the sepoy, employed by the English and French to guard their factories on the Coromandel coast, were clothed in the ordinary white cotton dress of the country. When the undrilled and undisciplined peons were first turned into sepoy (sipahis, warriors, an appellation till then reserved by the Musalmans for horsemen) they were given uniform jackets, turbans and short breeches of white cotton by their European masters. They wore a coloured band and rosette in

their turbans, and generally a coloured "kamarband" to denote their corps or the flag they served under. Their dress almost precisely resembled that of a syce of the present day. In the night surprise at Sanniavaram, Clive nearly lost his life from his mistaking the French sepoys for his own men owing to their being all dressed alike; and when they attacked him, he still thought they were his own men in a state of mutiny till he saw French soldiers hard by, when the whole truth flashed upon his mind.

It appears the English sepoys were first dressed in red coats in Bengal. The French sepoys probably always continued to wear white, that being then the colour of the national flag and uniform.

There is a corps of French sepoys among what are called the City Troops at Hyderabad, which is said to be the remnant of the French Sepoy Brigade originally maintained at that capital for the service of the Nizam by the celebrated M. Bussy and his successor Raymond. The men of this corps are dressed entirely in white; they wear stiff white turbans very wide and flat at the top, resembling the broad-topped chako worn by European armies at the beginning of this century; white jackets, and long white trousers. It is said that the words of command in this corps are still given in French. Many old uniforms of the Indian army may be seen at Hyderabad worn in the annual Lungur procession of all the armed men of Hyderabad before their sovereign. One headdress that may be commonly seen is a blue cloth Grenadier cap with a brass cockade, the latter shewing it to have belonged to some sepoy corps: the natives would not wear leather cockades, and as the cockade was an indispensable part of a military dress then, their cockades were made of metal or of linen. The objection to the new-fashioned turban which caused the mutiny at Vellore was principally owing to its being adorned with a leather cockade. The belts worn by the sepoys were at first covered with cloth, and this was probably done to obviate the strange prejudice against leather. Later on we find the high caste Bengal sepoy consenting to wear a chako bound with leather, but objecting to the leather peak in front.

The Madras sepoy at first wore a made-up turban of cloth or linen with a convex top surmounted with a rim of metal and surrounded with a metal crest to defend the head from a sabre cut. In the Cavalry and Artillery this crest was a plain hemisphere or knob; but in the Infantry two ridges of metal traversed the hemisphere: the curious shape which this gave to the crest has caused much conjecture, and some believe that it was intended that the horns or ridges should serve as a rest in firing. They continued to adorn or to disfigure the sepoy's head-dress until 1860, and are still worn by the palace guards of nawabs and rajahs in the south of India.

The Bengal sepoys wore a different kind of turban. The Duke of Wellington, in his despatches reporting the victory of Assaye, writes that Scindia's regular infantry wore a sundial turban, like that worn in the Bengal army.

The Bhopal sepoys wore turbans similar to the Madrasis. The turban was generally of dark blue cloth, with brass mountings, with a

white band crossing it and a rosette at one side. When some battalions of Madras sepoys were made into Light Infantry in 1812, they were given green cloth turbans with black bands and rosettes. The rest of the dress of the regular sepoy was a short scarlet coat, open in front, and without a collar : a necklace of white beads was worn under the jacket, and white cotton drawers reaching to the knee with a kamarband round the waist under the coat. The legs were bare and the feet in sandals. The native officers wore a necklace of gilt knobs, and sashes, boots and breeches like Europeans.

The Sepoy Battalions belonging to the Peshwa, to the Nizam, the Begum Sumroo and other potentates were similarly dressed and accoutred. The battle of Condore near Masulipatam, where Colonel Forde beat the French, was the first fight in Southern India in which the English sepoys who had come with Forde from Bengal appeared in red-coats; and the French consequently took them for Europeans at a distance, and this mistake had some influence on the fortunate issue of the day.

Our Indian regular Cavalry appear from the first to have been dressed in the light blue or French grey, which is still the colour of the uniform of our Madras Cavalry. The first irregular horse raised for our service in the early part of the century by the celebrated Colonel Skinner wore yellow coats; but their dress appears to have been anything but uniform. In an old plate some of them are represented wearing turbans, others with steel skull-caps with nose-piece and chain-mail curtain.

To return to Europe, the French Revolution which swept away so many old landmarks and institutions effected a complete revolution in the dress of the soldier. In the English army round black hats came into vogue instead of the three-cornered hat which had lasted so long. Though the latter was retained for dress occasions, and by the staff and all officers not actually serving with regiments, its shape was altered, and it was worn either fore and aft as it is at the present day, or across, as it was by the French Chasseurs à Cheval in the uniform which was the favourite dress of the Emperor Napoleon. The cap or chako was about this time introduced from Germany. Its origin appears uncertain: it was probably an imitation of the Hungarian Kalpak: but it achieved an universal popularity and soon displaced the round hat in the English army, and the cocked hat in that of France. The dress of the English soldiers in the last decade of the eighteenth century was the round black hat something like a flat-topped Oxford hat of the present day, with a black feather curled round the brim, a short-tailed scarlet coatee with white shoulder knots and trimmings, short white waistcoat, and white pantaloons and short black gaiters. The soldiery are represented in this dress in pictures of the battle of Alexandria, the siege of Seringapatam, &c., painted at the time. The walls of the Darya Daulat Palace of Tippu Sultan at Seringapatam are adorned (or disfigured) by paintings in a high style of native art representing the victory of the Sultan over General Baillie's unfortunate army. The English soldiers are in Albert chakos and long white trousers, the dress which they wore seventy years later, when the picture was renovated by order of Lord Dalhousie. It is

evident that the present painting can bear very little resemblance to the original whatever it was, for not a trace of a pigtail, of hair powder, or of a Spatterdash can be seen. The French soldiers accompanying Tippu in the picture are depicted as dressed in red coats, the same as the English.

The French Republicans discarded the white flag and white uniform of the Bourbons, and adopted dark blue as the dress of their soldiery; perhaps this was from the fact that the Gardes Francais or French foot-guards wore blue uniforms. This regiment which was always quartered in the capital, was early seduced from its allegiance by the Revolutionists, and it openly mutinied during the first popular disturbances in Paris, and joined in the attack on the Bastille by the insurgents, when the skill and discipline of its soldiers materially contributed to the easy capture of the fortress. The regiment which there disgracefully abandoned its king and its colours, was a native French one, while the foreign Swiss Guards remained faithful unto death. When the old royalist army was quite broken up by the flight of the officers and the disbandment of the men, the newly raised republican levies, the "Thundering Brigade," the "Terrible Brigade," &c., &c., were dressed in dark blue, which became henceforth the national colour. The Republican troops were consequently known to the insurgents and loyalists of Brittany and La Vendee as "the Blues." The tricolor was at the same time adopted as the standard, and Tricolor sashes and tricolor plumes of feathers were worn by the officers in the army. Hair powder and queues were abolished, and the hair was worn of an unlimited length. The Republican soldiery were at first badly dressed and equipped, military finery and frippery being looked upon as antagonistic to Republican simplicity: but the natural militarism of the then national character, still unconsciously influenced by the leaven of the banished aristocracy, soon led to the renewal of the taste for martial display and military millinery. The Troops who followed General Bonaparte on his Egyptian campaign were dressed in cocked hats, worn fore and aft with a plume of red hanging down behind, blue coats, with red facings and white cross belts, and white knee-breeches with white gaiters. The officers wore pantaloons and high boots. After Napoleon became Emperor he paid great attention to military costume, but he shewed little originality in this direction, and generally copied from German models. The Germans indeed have always set the fashion to the other nations of Europe in matters military, both tactical and sartorial. The German chako (originally "czako," a word betraying a Slavonic or Magyar origin) was introduced into the French Infantry; a broad-topped cap of felt bound with leather, with a hackle feather worn at first at the side but afterwards transferred to the top of the cap; and with the brass imperial eagle in front. The long trousers which replaced the knee-breeches and gaiters were also adopted by Napoleon before the close of his reign, though certainly not an improvement from a soldier's point of view. The rest of the French linesman's dress was a comfortable roomy blue coat with red or yellow facings and white trimmings. The Imperial Guard wore bearskin caps with crimson feathers in the side and the brass eagle in front; their coatees were

turned back with broad white lapels, and they wore facings and fringed epaulettes of crimson, white knee-breeches and long black gaiters. Their splendid physique, for they were the picked men of the whole army which was picked from the whole nation, the towering height of their black bearskin caps and the striking appearance of their handsome dress struck opposing lines of hostile infantry with awe; nor were they ever turned back in the day of battle till it was their misfortune to cross bayonets with British soldiers on Waterloo's fatal field.

Napoleon the Great was the first monarch who made his guards not merely a personal escort for himself, but the nucleus and reserve corps of his whole army. When he was still only a General commanding an army corps, he had his corps of guides or scouts, men picked from the whole of the troops for their intelligence and skill, always attached to his own person: and these guides afterwards became one of the Cavalry regiments of his Imperial Guard. When he returned from his fruitless expedition to Egypt, he brought back with him a few hundred Mamelukes, and these men he formed into another regiment of the Guard. They retained their Oriental dress and arms and wore the turban. They distinguished themselves in a Cavalry charge at Austerlitz, routing the Russian Cavalry. They afterwards accompanied Murat into Spain, where, as Mamelukes, they excited the pious horror of the ignorant and bigoted Spaniards. On the day of the popular rising at Madrid, when Murat cleared the streets with grapeshot, and let loose his troops upon the populace, the Mamelukes made a great slaughter of the patriots, killing every one they came across with true Turkish ferocity without regard to sex or age. Mameluke horsemen are represented in attendance upon Napoleon at the battle of Borodino in a picture now in our National Gallery.

There were many other corps of Cavalry in the Imperial Guard, which was a large Corps d'Armee complete in itself representing every branch of the service. The kindly and gallant Marshal Bessieres who was unfortunately killed while forcing the passage of the Rippach near Poserna the day before the battle of Lutzen long commanded the corps. Laterly it was divided into three divisions: "La Vielle Garde" or old guard composed entirely of grizzled veterans whom Napoleon valued as the best troops in his army: "La Moyenne Garde," or the Middle Guard: and "La Jeune Garde" or Young Guard who were picked from the flower of the conscription. Ordinarily men were transferred to the guard from the line as a reward for bravery, or for any distinguished service.

The Cavalry of the Guard represented every branch of that arm—Cuirassiers, Dragoons, Lancers, Chasseurs, and Hussars. There was also a regiment of Horse-Grenadiers of the Guard, in which Napoleon designed to resuscitate the mounted Musketeer or Dragoon of the times of Turenne and Marlborough: his experiment was ridiculed at the time, but this regiment of Horse-Grenadiers of the Imperial Guard behaved splendidly at Waterloo, where it was one of the last corps to keep its formation. The Chasseurs à Cheval of the Guard wore the green coat with white turn-backs and cocked hat placed athwartships which has become so associated with the figure of their Emperor: but the pride of the French Cavalry was in its Cuirassiers and Lancers,

both of which may be almost said to owe their creation to the genius of Napoleon. At the time of the French Revolution, the cuirass had almost ceased to be used in the armies of Europe, and Cuirassiers occupied pretty near the same position as they do at the present day: men kept more for show than for use. Neither the cuirass nor the lance were known in the English army in the Peninsula or at Waterloo. Napoleon raised whole divisions of Cuirassier regiments, equipped with steel helmets with a band of bearskin round them, and a tail of black horsehair hanging down from the comb to the horseman's waist behind. Their cuirasses were generally of steel, sometimes of brass; they wore blue coats with red worsted epaulettes, white leather breeches and Jack boots and were armed with carbines and long straight thrusting swords. Next to them in name and fame came the Lancers, of whom the first regiments raised by Napoleon were refugee Poles, who flocked into his service in the vain hope of his freeing their beloved country from the Russian and German yoke, headed by Poniatowski, Dombrowski and other noble refugees and patriots, and bringing with them their national head-dress and weapons. The Red Lancers of the Guard were all Poles dressed in red from head to foot, lance caps, jackets and overalls. They were in Spain where they excited the greatest terror among the Spaniards by their ferocity and daring, and gave and took freely with the British Infantry at Albuera. "These lancers," says Lord Londonderry in his account of the battle, "were peculiarly daring in their attacks and merciless in their operations": and narrating the exploits of one Pole, who single-handed attacked the whole Portuguese head quarters staff, the same author says: "The man literally seemed possessed by a devil."

This splendid corps perished in the disastrous retreat from Moscow; and their gallant and ill-fated Colonel, Prince Poniatowski, "the last hope of the Poles," was drowned swimming his horse across the swollen Elster during the flight from Leipsic, after the three days' battle of the Nations.

In all the armies of Europe, the chako superseded the three-cornered hat finally about the beginning of the century. Chin-straps were necessary to keep the high stiff cap on the head, and brass chin-scales were generally worn with it. The front of it was adorned with a metal plate or star with the badge of the nation or corps on it, a tall upright feather was usually worn in front, and it had bands, cords and tassels of some bright colour, white or yellow. The shape varied in various armies; the French, Prussians, Austrians, and Russians all wore it broad at the top; and this was much the most common fashion: in the English army, the round hat was succeeded at the beginning of the century by a very tall narrow-topped cap not unlike what was worn fifty years later by our soldiers in the Crimea. The Duke of Wellington said that this narrow top was found to be of advantage on outpost duty and such work, not being so conspicuous as the broad-topped cap worn by the French.

During the Napoleonic wars the dress of European soldiery assumed the fashions which retained their place for the next fifty years: the huge cocked hats worn by our Life Guards and Heavy Dragoons till the year 1805 were replaced by helmets: Hussars wore busbies or chakos:

Lancers copied the details of their dress from the Polish Red Uhlans of Poniatowski. Long pantaloons succeeded knee-breeches, and these in their turn were replaced by trousers. These latter became so universal that simply by the force of fashion they replaced breeches and boots in the Cavalry. Fashion was in those days allowed to reign supreme in matters of uniform, and it did not matter how absurd or uncomfortable a garment or head dress might be as long it was the fashion. But during the great continental wars there were some bounds to the vagaries of army tailors. The Reign of Fashion did not set in with full swing till a few years later, under the auspices of George the Fourth and the Monarchs of the Holy Alliance.

The change of a uniform, or rather the introduction of one, cost a sovereign his throne and life in 1807. Sultan Selim the Third had profited by the lessons of European advisers as well as by those of adversity, and was anxious to introduce reforms of all kinds into the Ottoman military system: one of them being the adoption of uniform dress, which had never got any further after its first institution in the Janissaries, but indeed had rather retrograded, no two men in any corps being now dressed alike.

In the pictures of Turkish military costume published in London in 1818 the only article of uniform in the dress of the Janissaries there shewn is the cap: and even this is replaced by turbans of various kinds on many of them.

Sultan Selim experienced the most violent opposition from all his subjects in trying to carry out reforms; and unfortunately he commenced them at the wrong end, with external changes in dress and armament, precisely those which were most offensive to the conservative feelings of the Turks. He gave his Nizam Jadid (New Regulars) a melon-shaped cap, intended to resemble a turban, a short jacket, and knickerbockers. The Topjis or gunners consented to wear a similar dress: Selim next tried the Janissaries: the men in barracks were obdurate, but a lot of reserve or volunteer Janissaries had just been called out for the Russian war, and it was thought they might be more yielding: they at first consented to wear the new uniforms: but when they were issued to them, they broke out into mutiny, were joined by all the troops in Constantinople, and the matter ended in the dethronement and death of the reforming Sultan, the massacre of the "New Regulars," and the postponement of the introduction of a uniform dress for the Ottoman army for twenty years more.

We will now review the uniforms worn in the British army during the Peninsular and Waterloo Campaigns. At the beginning of the great revolutionary struggle the military forces of the British Crown were almost in a state of total disorganization owing to the incompetency of the Royal princes who held the chief direction of affairs, the parsimony of the Ministry, and the want of any regular system of supply and organization. The messes were bear-gardens, the parades a lamentable exhibition of blunders. The stern necessities of war gradually taught officers their business, and generals like Sir John Moore and Sir Arthur Wellesley, by their precept and example, evolved

order out of chaos. It was during this period that a great change was effected in the dress of the army. The cocked hat was entirely laid aside as a head-dress for the troops, though it was still worn by all staff and unattached officers, and by all officers in court or levee dress. The knee-breeches and long gaiters were at first supplanted by tight pantaloons and short black half gaiters, like those worn by Mr. Pickwick, while hessian boots were adopted by the Light Cavalry. The pantaloons did not long remain in use in the English army, but were superseded by trousers. Hair powder and pig-tails vanished from our army as soon as they were discarded on the continent.

The coat had its tails shortened till it became a jacket, the waistcoat was abolished altogether, and the lapels of the facing colour now barely shewed, no longer extending down nearly as low as the waist. The tags and loops which had served to fasten them back became now mere useless strips of braid sewn across the breast of the coat for appearance sake. The ridiculous two-inch tails still shewed a white turn back and button in memory of the old looped shirts and slashes of braid where the pockets once had been. The collar was made standing in imitation of the Germans.

The Infantry soldiers who fought under Wellington in the Peninsula were dressed in red coats of this pattern with white braid, and facings of the regimental colour, and white woollen or worsted epaulettes. They wore a hat with a false front, like the old Grenadier caps, which gave it an appearance of height from the front view, while it was conveniently low at the back. It was ornamented with a gilt or brass plate in front and a hackle feather at the left side, and a square peak and leather chin-strap. Grey trousers with a red stripe were worn in winter and white ducks in summer. The officers wore gold epaulettes (subaltern officers only wearing one) gilt gorgets and crimson sashes round their waists. Officers of Grenadier and light companies which formed the two flank companies of each battalion wore gold wings instead of epaulettes, and had their sashes finished off with long cords and tassels which were worn looped up to the breast. The Fusilier Regiments wore bear skin caps.

The Life Guards and Blues wore helmets, jackets with shoulder scales, and grey trousers : no cuirasses. In contemporary pictures of the battle of Waterloo they are represented as wearing helmets with high combs, quite plain, without any fur, feathers, or horse hair on them, like those worn by the Austrian Cavalry. The Heavy Dragoons were similarly dressed : the Scots Greys who had always worn Grenadier caps now wore bear skin caps.

The Light Dragoons wore jackets braided like Hussars : and helmets with a fur crest and sometimes with a leopard skin band round them. In a picture in the Kensington Picture Gallery representing the Pope receiving some officers of the Twelfth Light Dragoons, now the Twelfth Royal Lancers, the officers are dressed in blue jackets closely braided across the breast with silver lace, white breeches and hessian boots. Thackeray, in one of his novelettes, gives an amusing caricature sketch of the dress of a Light Dragoon of the time : a short

sky-blue jacket with silver lace and wings and 3,000 small silver sugar-loaf buttons down the front: rhubarb-coloured leather pantaloons and red morocco hessian boots, bound with silver lace and tassels, "while a brass helmet trimmed with leopard skin with a scarlet plume upright on the left side and the crown surmounted with a bear skin muff, gave the head a fierce and chivalrous appearance more easily imagined than described."

Hussars, into which a few of the Light Dragoon Regiments were converted in the first decade of this century, wore chakos and richly-braided jackets and dolmans. They were the first British troops who were permitted to grow moustaches.

John Bull's rage was extreme when he saw his horse soldiers turned into the semblance of "furriners."

A regiment of Hussars turned out to quell the Burdett riots was roughly handled by the populace: this was said to be because the mob took them for Germans on account of their fur-trimmed pelisses and moustaches.

The Foot Artillery were dressed like the Infantry, only in blue: the Horse Artillery (who had only just come into existence to replace the galloper guns till then attached to each regiment of Light Cavalry) dressed like Light Dragoons, but the bear skin muff on their helmet crossed it from front to rear, making the horse-gunner look as if he had a huge caterpillar coiled up upon his head.

Riflemen were introduced into our army towards the close of the last century. They were dressed like the rest of the Infantry, but in rifle-green with black facings, trimmings, and accoutrements. Their officers and also the officers of Light Infantry carried curved sabres instead of the ordinary sword.

The Highland regiments some time towards the end of the last century adopted the practice of wearing plumes of ostrich feathers in their woollen blue bonnets, and it became the fashion to wear this in such a way that the original headdress became quite concealed from view, and the homely and comfortable "Tam-o-Shanter" was changed into a top-heavy feather bonnet presenting the appearance of a Grenadier cap. The hackle feather, which was common to all the Infantry, was worn at the side of the bonnet, the Grenadier Companies wearing white, the light companies green, and the battalion companies white and red. The 42nd Royal Highlanders alone wore scarlet feathers, a distinction said to have been granted to them for their valiant deeds in the Peninsula and at Waterloo. The Fusilier regiments, as well as all Grenadiers, wore white plumes. The 5th Northumberland Fusiliers wore white plumes with red at the top, while all the infantry of the battalion companies of the line had the red at the base of the plume. This distinction of the 5th is said to have been granted to the regiment because the men in some Peninsular battle, perhaps Albuera, dipped their plumes in the blood of the slain Frenchmen—not a very likely story. But the origin of most of these distinctions, which probably originated simply in a caprice of a Colonel or of some Royal personage, has been wrapped round with a mass of legend.

It is said, we know not on what authority, that the white plume worn by the Scots Greys in their fur caps was granted to them for their services at Waterloo : though it is not likely that one regiment should have been thus invidiously selected for decoration from the famous Union Brigade.

The 28th Gloucestershire Regiment of Foot, nicknamed "the Slashers," wore a plate both in front and behind their caps, in memory, it is said, of the rear rank of the regiment having faced about when in line to repulse an attack of French Cavalry at the battle of Alexandria. The badge is still worn by the officers of the regiment on the back of their helmets.

The 56th Regiment wore facings of a purple color which was brought into fashion by the infamous Marchioness de Pompadour, and was called after her title. This regiment was raised at the time this colour was the vogue, and it was adopted for the facings, and the regiment ever after went by the nickname of "the Pompadours."

Several other regiments had also nicknames derived from the colours of their facings.

The 5th Dragoon Guards were anciently called the "Green Horse" and the 7th Dragoon Guards the "Black Horse." The East Kent Regiment were always the "Bufs," and the 78th Highlanders "the Ross shire Bufs."

The volunteers who were raised in 1778 and 1804 were dressed and equipped like the regular troops, but many corps wore blue uniforms instead of scarlet. The colour and pattern of their uniform seems to have been left like that of the volunteers of 1860 to the choice of the members of the corps.

The Marines continued to wear the round low-crowned hat which had so much the appearance of a civilian head-dress, long after the adoption of the chako by the army.

(To be continued).

A FEW WORDS ON THE INDIAN VOLUNTEER FORCE.

By Captain L. BROWN, Bengal Staff Corps, Adjutant, Hyderabad Volunteer Rifles.

At a time like the present, when the nations of Europe are watching each other with jealous eyes, and the armies of Russia are threatening our northern frontiers, it behoves every soldier, nay more, it behoves every Englishman in India, official or otherwise, to ponder over our position as regards our military preparedness and organization. As to the regular standing army of the country we have nothing to fear; the proper authorities are well able to look after its efficiency. That standing army has only its own reserves to look to, but that is not enough; in order to give a feeling of security to the country and to allow the Government to act with vigour, a third reserve is wanted, and this is only to be got at by a system of volunteering or compulsory militia service.

Take the Indian volunteer army as it stands at present; at least one-quarter of the men exist only on paper, another quarter certainly hold the official certificate of efficiency, but know very little, if anything, of discipline or drill, and to put it, even in the most favourable light, only about one-half the force is really worth the money the Government spends on it. Over and over again has the question been asked as to how this is to be remedied, but without eliciting any satisfactory answers. To begin with. The fault lies in a great measure with the officers. It is an undisputed fact that those eminent military commanders whose exploits have ennobled the historical annals of their country have always been distinguished by an intimate acquaintance with the details and requirements of their profession. Herein lies, to a great extent, the secret of the apathy shown by the men. Their officers, as a rule, do not evince sufficient interest in them, and in a great many cases know less of the interior economy of their corps and of drill than those over whom they are placed. We, of course, see around us brilliant exceptions where volunteer officers are efficient in every way, take a keen interest in their men, and are able, when called upon, to instruct or lead their men, and what is the result? The men imitate the zeal of the officer, make themselves efficient volunteers in reality as well as on paper, and make their company a credit to any corps.

No, the future reputation of the volunteer army in India, and the efficiency and honour of its officers is to be provided for by a firm and judicious exaction of the regulations of the service, as clearly defined and laid down for their professional training and conduct. It is not the present intention of the writer to say anything as to the appointment of officers or the class from which they should be drawn, but simply to point out that a gentleman, before he accepts a commission in a volunteer corps, should be prepared to go in for the thing thoroughly,

to go in for it not merely as a pastime or from love of a little soldiering, but as a stern duty. Volunteer officers should remember that they constitute the moral force of their corps, and should they alienate themselves from their men, or in any way evince by their demeanour that their interests and honour are something distinct from theirs, or, as is frequently done, superciliously neglect to become acquainted with all the circumstances of those under their command, they are deficient in the most essential portions of their qualifications as volunteer officers. They should recollect that those over whom they have been placed are, as a rule, hard-working men who give up their spare time to volunteering, but who would give up still more time if they saw that the sympathies of the officer were with them. It is a well known fact in the regular army that the officer who gets the most ready and cheerful obedience from his men is he who knows most about them, who joins in their games, who sympathizes with their hopes, and does his best to make their life a happy one. But good officers are not sufficient. A volunteer force to be efficient must consist of men as well as officers—men whose names appear not only on paper, but who attend regular drills—men who feel some pride in their corps—men to whom, in time of need, we might confide the charge of our depôts and arsenals and our homes. A grand opportunity now presents itself, at this present time, of effecting certain wholesome changes, which would provide this class of men, and which the imperious urgency of the case demands. It is beyond the scope of the present letter to enter into details. It is sufficient to say that one general feeling of *esprit de corps* must be engendered in the volunteer force of India, and that when the requirements of the service make it necessary, and volunteers are combined with the regular troops, that the same impulse of ardour and devotion will proudly animate the whole, and they will find that the Government of India which supports an enormous army on a scale of munificent remuneration elsewhere unknown will not be unmindful of its unpaid army.

On a future occasion I should like to give a few suggestions as to the composition and organization of the Indian Volunteer Force, for at a time like the present the Auxiliary Forces, both in and out of India, are attracting much attention, and, as regards this country, a general feeling exists that the arrangements are not in a satisfactory state. The military forces at the disposal of the Government are very considerable, but the volunteers are not organized so as to combine readily with the regular forces under a sound system of army administration, a system which should have for its object the making of their employment effective upon a sudden emergency.

In an article lately contributed to the *Civil and Military Gazette*, Captain Ozzard of the Bengal Staff Corps, and formerly Adjutant of the Northern Bengal Volunteer Rifles, gives it as his opinion that the Indian Volunteer Force is in a very unsatisfactory state, and this opinion must, I am sure, be endorsed by every military man who has any acquaintance with the force, or who has been connected with it professionally. The

question is always being asked as to whose fault it is, but at the present moment the question that presses is not who is to blame, but what shall we do to remedy this state of things? Many are the suggestions which have been made more or less practicable, but in nearly all of them there is sure to be something worthy of consideration—an idea, no matter how trivial, which might be considered by a Committee on Re-organization, and elaborated by them and made of practical value. It is with these feelings that I venture to put on paper a few suggestions which appear to me practicable, and which would not require any of those hasty and sweeping reforms which are at all times to be deprecated.

The remedy suggested by Captain Ozzard is that all Europeans and Eurasians in the country, between the ages of 17 and 40 should be enrolled and compelled to serve; in fact, he goes in for conscription pure and simple, or what would really amount to a *levee en masse* of the European population of India. May the day when this sort of thing is a necessity be yet far distant; it is the last thing which ought to be resorted to. It has always been the pride and boast of England that her army, both European and Native, is a volunteer one, that no man is obliged to serve against his will, and that when he elects to become a soldier he gets well paid for doing so. No, let us remain as we are, volunteers both in the Regular Army and Auxiliary Forces, but with certain changes and modifications.

1. Let the force be called the Reserve, and placed under the immediate control of the Commander-in-Chief.

2. The Reserve to consist of Militiamen and Volunteers.

3. The uniform to be of one pattern and not, as now, of all colours and shapes.

4. More care to be taken in the selection and appointment of officers.

I will now endeavour to explain, as clearly as I can, how this is to be done. In a pamphlet on Army Administration, published in 1868, the writer says: "A mixture of old soldiers with the less practised levies of Militia and Volunteer Regiments gives the infusion of steadiness and practical experience they require, and is likely materially to increase their efficiency;" and for this reason I would try and obtain for each Reserve battalion a proportion of trained soldiers, of whom there are plenty in India—men who have decided to remain in the country and who would not be averse to a little soldiering on occasions. At each large military station or district where there is at present a Volunteer Corps, let the Adjutant be made a staff officer under the general officer commanding the district, and act also as Adjutant of the Volunteer Reserve battalion at that place. Every man taking his discharge from a British regiment, and who has already signified his intention of remaining in the country, should be sent to him, and then asked if he is willing to serve in the Reserve as a Militiaman, getting thereby a small bounty and monthly allowance. By this means a proportion of trained men would be obtained for the force. Again, every man, not having been in the regular army, who comes up for enrolment in the Reserve should be asked whether he elects to serve as a Militiaman or Volunteer; if the former he should also receive the bounty and allowance and be liable for certain drills throughout

the year ; if the candidate decides to serve as a Volunteer he would be under the same rules and regulations as at present, but those rules, &c., to be more strictly adhered to.

The above three classes, viz :—

1. Militiamen from the Regular Army,
2. Militia Reserve Men,
3. Volunteers,

should be formed into one regiment and styled the Volunteer Reserve Battalion or Administrative Battalion as the case may be, and given a territorial title, such as for instance, the Delhi Volunteer Reserve Regiment or Hyderabad Volunteer Reserve Regiment—men belonging to the Militia portion of it wearing an M on their shoulder-straps, and Volunteers a V ; but in all other respects the uniform to be the same. The Militiamen would have, of course, to turn out for drill on specified dates every month under certain pains and penalties for not doing so ; and the Volunteers to be under the same obligations to do so as heretofore. Sergeant Instructors should be appointed from the regular army, and from those militiamen who shew themselves thoroughly qualified for the position ; and after five years service as Sergeant Instructors they should be allowed warrant rank, provided they have been well reported upon during that time. This matter of warrant rank for deserving Sergeant Instructors of Volunteers, I would very strongly urge for the consideration of Government, for from my experience as a Volunteer Adjutant, I am convinced that there is no harder working set of Non-Commissioned Officers in the British army, and yet they have nothing to look forward to, and no hopes of advancement. Their duties are many and varied, they must shew tact and firmness, and at times a great command of temper. They are often isolated, away from all immediate control, and have great responsibilities in the way of arms, ammunition, and money.

As regards the uniform, it ought, undoubtedly, to be of one universal pattern for the whole of India, and obtained on indent from the Army Clothing Department ; the actual cost being deducted each year from the Capitation Grant of the Corps. It has been my endeavour in making these suggestions to keep from anything that would entail much extra expense on the Government, but I do think that every volunteer ought, on enrolment, to be supplied with a pair of English ammunition boots free of cost to enable him to march and to fire steadily from the knee. I have no hesitation in saying that there is not in India a Volunteer Corps capable of marching fifteen miles if suddenly called upon to do so ; the men have not got the shoe-leather ; there are, of course, some who can and do provide themselves with good strong boots, but the majority are poor men, who cannot afford it, and come to parade in cheap, ill-fitting useless articles, the Eurasian, especially being very partial to patent-leather shoes which are generally worn out.

It is beyond the scope of the present article to enter into the question of the selection and appointment of officers. Many of them, as Captain Ozzard remarks, are very enthusiastic, but a large proportion are, I am sorry to say, lamentably ignorant of their duties and take no interest whatever in their men.

The foregoing suggestions have been put down in the crudest form and are left to be worked out at some future time by competent officials should any of them be thought worthy of consideration. Lastly, I would cause a circular to be sent to the heads of the various Government officers and Public Works Department, calling upon them to induce those under them to join the Auxiliary Forces ; in fact, I would go further, and make it a condition of service under the Government the same as is done in all the large railways in the country ; in the same way all the large banking and mercantile firms might be appealed to, to do the same, and by this means a re-action would set in throughout India and service in the Reserve looked upon as a duty and an honour.

The apathy with which the efficiency or otherwise of the Volunteer Force is regarded throughout India has been truly astonishing, especially so considering what an important factor it might be made in time of pressure. That the force is not efficient we admit, but will go on further at present, for all criticism that fails to suggest a remedy for the faults it professes to see, lays itself open to the grave charge of needlessly condemning what it cannot amend ; and, without to-day entering into the question of organization or the system of recruiting at present in vogue, we propose to make a few suggestions which would make the drills more popular to at least a portion of the men, and make the force generally of more practical value. These ideas are not put forward because of any originality, but in the hope that they may serve to develop an interest in the subject.

The Government capitation grant is allowed for every man who has attended nine drills and fired the regulation number of shots at a target ; but every military man will admit that this amount of instruction is insufficient to make him even fairly proficient, and able to take his part in the movements of a battalion. The majority of our Corps in India are made up of men who live miles apart from one another, and whom it is next to impossible to collect in numbers large enough for a good battalion parade more than two or three times during the drill season ; and it is only by constantly pegging away at them that they can be induced to turn out at all. To get the men to come to parade more frequently some inducement must be held out ; a certain amount of pleasure must be combined with work, and the tastes of individual men studied, and the suggestions we now make will, we believe, if carried out, make the parades more attractive to at least a portion of the men and fulfil the end in view. "Half a loaf is better than no bread," and if matters cannot be arranged to make drills interesting to the whole corps, we must do our best for a portion and be contented. In every large corps in India a number of the men keep horses or ponies either for pleasure or from necessity, and our opinion is that these men should be encouraged to use their animals on parade and taught their duties, as mounted infantry men as well as foot soldiers. When we talk of Mounted Infantry men we do not mean that they should belong to a company composed solely of mounted men, who would in time degenerate into inferior Cavalry : neither do we mean that they should neglect their duties and drills as foot soldiers. But what we want to get at is, that in every Volunteer Corps every man who can ride and

owns an animal, should be taught his duties as a mounted infantry man, and be able to act as such if called upon to do so. The importance and value of mounted riflemen have been for a long time recognised by our most eminent practical soldiers, but keeping always in view the two following ideas :—

1st. They should not usurp the functions of cavalry, and should look to the rifle as their weapon.

2nd. They should retain all the characteristics of infantry.

A certain amount of training is of course necessary to enable a man to become a useful mounted rifleman, but he should never forget that he is a foot soldier and a member of Volunteer Infantry Corps. When the Home Government were asked if it was their intention to form corps of mounted infantry, they replied that they would keep in store the necessary equipment, but that they had no idea of forming a permanent corps, but wished to be able to mount a certain number of men for this duty if necessary.

Let the Adjutant of the Corps make out a list of all officers and men who are in the habit of riding; let him then send round to these officers and men a circular asking them if they are able and willing to use their animals on parade; make out a nominal roll accordingly; and then whenever there is to be a parade, a certain proportion of them should be detailed in orders to attend as mounted infantry, and taught as far as possible the duties of that arm. Let this system be adopted and carried on until every riding man in the corps obtains a fair knowledge of his work, and we do not think we are over-sanguine when we say that the increased strength it would give to the force would come to be universally acknowledged. At the annual inspection of the Corps let the General see the regiment on parade, and then after the battalion movements are over, let the men who have undergone instruction fall out, mount their animals, and go through their mounted rifle drill. Every man who obtains, in addition to the ordinary efficient certificate, an additional certificate of having done a certain amount of *extra* drills as a mounted rifleman, should be allowed a small extra capitation grant.

Experience has shown us the utility of the "mounted rifle" plan of fighting, and in India especially a few mounted volunteers who know their work would be invaluable. They could be sent forward with advanced and rear guards, or to occupy detached points and villages, and though they might not be strong enough to hold these places, they might, by their fire, be able to delay an enemy and give time for their comrades on foot to come up. Clery lays it down that "to get the start of your enemy implies early and accurate information of his movements," and adds, "that this is the best guarantee for success and an absolute essential of security," and who is so fit for this duty as the Indian Volunteer? He knows the country for miles around, as a rule speaks the language well, and is accustomed to deal with the natives.

In this article we have used the word animal in preference to that of charger; and we have used it advisedly, for we do not advocate that a man should come to parade on one. No, let him come on whatever he has, so long as he can ride it, and it is able to carry him.

A MACHINE GUN BATTERY AND ITS EQUIPMENT.

By LIEUT. G. E. BENSON, R.A.



I.—EMPLOYMENT OF MACHINE GUNS IN A BATTERY.

My experience of machine guns is not very extensive, having been chiefly acquired in the Suakim expedition of this year. During this time I was attached to the Royal Marine Artillery to assist them in forming a Gardner Gun Battery drawn by mules on field battery lines, and for the short time I served with this battery ample opportunity was afforded me for thinking over the question of machine guns and their use, and of watching their effect in the field, with a view to find out the best tactical use that can be made of them in future campaigns; and from what I then saw I feel convinced that a great field is open to them, provided that in future they are equipped in a manner more suited to their powers.

Machine guns have not hitherto been given the same chance as field guns; for, when more machine guns than one have been employed in the field, they have as a rule been separated; so, if one got out of action either from being disabled or jambed, the consequences were serious at that point simply from the fact of its not having the support of other guns. One might as well separate a battery of field guns by sending each gun to a different place to fire at different objects; for, as I will afterwards point out, machine-gun-fire partakes more of the nature of artillery shrapnel fire than of infantry fire.

The formation of the Gardner guns into a regular battery in the Suakim expedition is no doubt a great step in advance, yet in my opinion it is only *one* step, for the real value of machine-gun-fire depends on the rapidity with which they can be moved up and brought to act on any desired point of the field of battle. The only occasion on which the Gardner battery came into action against the enemy when it was not in a defensive position in a zareba, was in the action at Hasheen on March 20th, 1885, on which occasion the guns were run out at the left rear corner of the guards' square, and opened fire into the scrub at 200 to 300 yards range, whence some of the enemy were annoying us by their fire. After a few rounds the enemy were silenced. Again on the retirement of the force later on in the day the battery was ordered to go outside the square and assist to cover the retirement. This we did by coming into "action rear" on the flank of the square, and firing at the enemy till we were left 30 or 40 yards in rear; then we limbered up, and hurrying along (the men being dismounted we could not go very fast) came into action again on the flank of the square. The enemy at times followed us at a distance of 300 to 400 yards,

but did not show themselves much in the open, except at a much longer range ; however we continued our fire as long as we saw them.

Our fire was much hampered by the necessity of limbering up almost immediately after the square passed us ; for, as our men were unmounted, we could not retire much faster than the infantry ; thus we could never remain long enough in action to make our fire really effective.

If the guns had been drawn by horses, and the gunners mounted on the carriages, we could have taken up each successive position much more rapidly, and it would have been safe to remain longer in action after the square had passed us. Thus the whole time of remaining in action would have been increased and the effect of the fire much greater.

At Tamai the Gardner battery was left with one infantry battalion to defend the zareba, so did not have a chance of coming into action ; but as I accompanied the advance on that day, I took note of occasions when the battery might have been employed with advantage.

Several parties of the enemy were firing at us at distances of from 700 to 1,500 yards, and I feel sure that once the range was found, (as it speedily would be) a shower of bullets from the machine gun battery would have silenced those parties that were beyond the limit of infantry *aimed* fire, much sooner than it could be done by the *unaimed* infantry fire.

The affair at Hasheen on the 20th is almost the only occasion, I believe, in which machine guns have been used as a battery acting independently ; and this, I take it, is the proper way to employ them. It is all very well to place them to sweep defiles, or at the salients of redoubts when occasion requires ; but by confining them to those uses the principal advantage of machine guns is lost, *viz.*, their mobility. Now, when drawn by mules with the detachments marching alongside, they still cannot move faster than infantry, and (as happened at Hasheen) neither dare they trust themselves far from infantry, nor can they change position with anything like sufficient rapidity to make the most of their fire ; for, of course as with artillery, the more time spent in taking up a position, the longer they are out of action and valueless.

The action of machine guns, as I said before, partakes more of the nature of artillery shrapnel fire than of infantry fire, for the following reasons :—

- 1st.—The fire of a battery of machine guns being aimed by only one picked man per gun is immediately under the control of the commanding officer of the battery, who can at will turn his stream of bullets on any spot within 1,700 yards, and form a zone of fire in which no troops could live, just as a battery of artillery sends a smaller number of bullets a greater distance by means of shrapnel shell.

2nd.—Infantry aimed fire ceases at 900 or 1,000 yards, while machine-gun-fire can be aimed and under control up to 1,700 yards at least.

3rd.—Infantry fire, necessarily from its extended front, cannot be directed on one special object so easily, and in individual firing (from nervousness, bad shooting, &c.) a very large proportion of bullets must go astray; while machine guns like field guns have no nerves, and their bullets never fall very far apart.

4th.—Machine guns can have the mobility of horse artillery, as before mentioned, if properly equipped.

At Suakim about the end of March we had some target practice with the four 5-barrelled 450-bore Gardners which we were then using, and the results I think are worth noting here.

The target was a canvas screen 4 feet high and 10 yards long, and we opened fire at what we guessed was 1,050 yards—a range at which infantry fire is no longer aimed. After a few rounds we saw, by the amount of dust knocked up in front of the target, that our range was too short, and increasing the elevation to 1,100 yards fired about 80 rounds per gun. We then limbered up, retired, and came into action at 1,200 yards, when we again fired about 80 rounds per gun. I then rode up to the target, and was surprised to find it literally riddled with bullets. There wasn't a place where a man in any position whatever could have escaped. We afterwards advanced nearer, to about 800 or 900 yards range, and after a few more hundred rounds per gun the target was practically cut to pieces. It was unfortunate that on this occasion we could not try the guns at a longer range than 1,200 yards. The great fire effect at 11 and 12 hundred yards range is of course due to the combined action of the four guns under one man; and though there were several jams, caused by the extractor pulling the base of the cartridge off, the other guns kept up the fire while a jamb was being remedied. It was discovered by the Marine Artillery that the best method of rectifying a jamb of this description was by putting a pared bullet in the muzzle of the jammed barrel (just small enough to go down) and pushing it down with the cleaning rod so as to catch the edge of the cartridge case and force it out. But our object in the future is to have a machine gun which will never jamb. It is only with a view of suggesting the manner in which they should be employed when perfected that I write these pages.

II.—THE EQUIPMENT OF A BATTERY.

On the return of the force from Tamai we took over four of the new two-barrelled 450-bore Gardners sent from Woolwich, (sufficient men not being available to man the six provided), but unfortunately during the time I remained with the battery we had no brush with the enemy to test their efficiency in the field, so that my experience of these new guns is small. I hear, however, from an officer who fired several thousand rounds out of them at Shoeburyness that they never jamb.

The points I noted about their equipment which might be improved on are as follows, *viz.* :—

The axis of the gun is too high above the ground (about 4 feet); this entails less effective fire at short range, for in sweeping a plain or glacia, the bullets leaving the bore 4 feet above the ground, would have a trajectory in a range of 300 yards, which would go over the head of a man 200 yards distant. If the axis of the gun were only 3 feet 3 inches from the ground, the highest point of the trajectory would be 9 inches nearer the ground, and the fire would be more effective and sweeping. The great height of the gun causes another important defect, in that, it entails the No. 3 of the detachment (who feeds the gun) having to stand on a step to reach the top of the feeder during the time the gun is in action; he thus forms a most conspicuous object for the enemy to fire at. It would be better, too, if it could be so arranged, for the feeding number to stand in rear of the axletree instead of in front, and for a folding shield to be fitted on the axletree for his protection. This would reduce his exposure to a minimum. For savage warfare this of course is not so important, as savages are seldom good marksmen.

It struck me, and the same idea was shared by every artillery officer at Suakim who saw the new guns and their equipment, that the carriages were a great deal too heavy for the guns. The trails and axletrees especially (both E. O. C. and R. C. D.) appeared almost strong enough to withstand the recoil of a 9-pounder gun. Of course, with machine guns there is no recoil which causes any strain worth mentioning either on the trail or axletree, so all that is required is a trail strong enough to sustain the strain of draught over rough country, and an axletree strong enough to carry the gun and fittings (and men if mounted on axletree seats) under the same conditions.

The traversing and elevating gear appear perfect and are a great improvement on the gear of the 5-barrelled guns we used at first.

I will now proceed to give my ideas in detail as to the best method for equipping a battery of machine guns.

The battery might consist of either four or six guns. The advantages of a 4-gun battery are, that it would be handier and would seldom have to be split up on the battle-field. It is also a convenient number to put into a redoubt if used for passive defence. On the other hand the men required to man four guns would barely be sufficient to carry on the ordinary guard and picket duties of a battery. Of the *matériel* let us first consider the gun carriage and limber. For these I suggest the following figures:—

Axis of gun 3 feet 3 inches to 3 feet 6 inches above the ground. Wheels 4 feet 8 inches diameter. Track 5 feet 2 inches (as in present carriage.)

The axis of the gun might be lowered by means of a crank in the axletree, also by reducing the height of the 'crosshead' on which are the elevating and traversing gear. Axletree boxes with guard-irons, &c., for seats should be provided, each box to hold 500 rounds of ammunition

in holders. Thus a thousand rounds would be immediately available in case of sudden attack.

The gun, filled axletree boxes and fittings complete, would weigh about $4\frac{1}{2}$ cwt. A folding shield might be added to each axletree box to protect the gunners when in action ; this would make the total weight to be supported by the gun axletree about 5 cwt. The feeding should be done from the rear of the axletree : to do this the gun would have to be set a little further back in the carriage, at the expense of making the point of the trail a trifle heavier to lift. The arrangement for keeping the barrels cool would be the same as in the present 2-barrelled Gardner, as would also the admirable plan by which the feeder is always kept secured to the gun.

The limber might be similar to the present one, except that I would recommend the limber box to be made longer and narrower, and fitted with guard-irons and hand-straps in order to seat two gunners ; the box should hold at least 3,000 rounds in holders, as in the present carriage.

The spare part box should be carried on the waggon to lighten the load for the gun-team to pull as much as possible.

The weight of the limber box packed, together with intrenching tools, would be about $4\frac{1}{2}$ cwt. The gun carriage, and limber stripped, should not weigh more than about $11\frac{1}{2}$ cwt. This would make the whole weight of the gun carriage and limber packed about 21 cwt. With four gunners mounted the total weight ought not to exceed $26\frac{1}{2}$ cwt.—a load which four horses would be able to drag quite as fast as horse artillery.

For the carriage of ammunition I think one waggon per gun fitted up much in the same way as an artillery ammunition waggon, would meet the usual requirements. On the waggon limber would be a box containing 3,000 rounds in holders as in the gun limber. On the waggon body there might be two boxes, each with 2,000 rounds in holders, while the spare part box might be carried on the foot board. All the ammunition boxes should be fitted with guard-irons and hand-straps for seats. The weight of the ammunition boxes filled on the waggon limber and body, together with the intrenching tools and spare part box, would come to about 11 cwt. Allowing 12cwt. for the stripped waggon limber and body, the weight of the waggon packed would not exceed 23cwt., which with four gunners mounted would become $28\frac{1}{2}$ cwt. This also could easily be drawn by four horses.

The sergeants and coverers of each gun would be mounted on horse-back.

The weights I have allowed for the stripped carriages in the above estimate may seem too low to some people, but it is my opinion that in this age when steel is so extensively used, there would not be any difficulty in keeping the weights below those estimated, *viz.*, $11\frac{1}{2}$ cwt. for the stripped gun carriage and limber, and 12cwt. for the stripped waggon body and limber.

The following would be the war strength of a battery of machine guns equipped as above :—

OFFICERS AND MEN.

	FOUR GUN BATTERY.		SIX GUN BATTERY.	
Majors	1	...	...	1
Captains	1	...	...	1
Subalterns	2	...	...	3
Sergeant Major	1	...	...	1
Quarter Master Sergeant	1	...	...	1
Sergeants	4	...	...	6
Corporals	4	...	...	6
Bombardiers	4	...	...	6
Gunners	28	...	...	42
Drivers	34	...	...	42
Trumpeters	2	...	...	2
	82			111
<i>Artificers—</i>				
Farriers	1	...	...	1
Shoeing Smiths	2	...	...	3
Collar Makers	2	...	...	2
Wheelers	2	...	...	2
Armourers for machine guns }	1	...	...	1

Total 90 Officers & Men. Total 120 Officers & Men.

HORSES.

<i>Riding—</i>				
Officers	6	...	...	7
Staff Sergeants	2	...	...	2
Other N. C. O.'s	8	...	...	12
Farrier	1	...	...	1
Shoeing Smith	1	...	...	1
Trumpeters	2	...	...	2
Range-finders	2	...	...	2
Spare	3	...	...	4
	25			31
<i>Draught—</i>				
Guns	16	...	...	24
Waggons { Ammunition	16	...	...	24
Forge	6	...	...	6
Store	4	...	...	4
Ammunition & Store	12	...	...	12
Spare	6	...	...	8
Total	85	Horses.	Total	109 Horses.

For the sake of comparison I may state that—

The war strength of an B. H. A. Battery is	Men.	Horses.
Do. do. 9-pr. or 13-pr. F. B. is	182	183
Do. do. Machine Gun Battery of }	175	132
six guns	120	109

The amount of ammunition carried per gun with the battery would be:—

In the axletree boxes	...	1,000
In the gun limber box	...	3,000
In the waggon limber and body	...	7,000
TOTAL	...	<u>11,000</u> rounds per gun.

These numbers are calculated from the amount of room the cartridge holders for the Gardner gun take up.

The supply of ammunition would be kept up in the field by S. A. A. carts from the ammunition column, each carrying nearly 10,000 round in the service S. A. A. boxes.

The empty-holders would be refilled from those boxes by the spare gunners while the battery was in action.

The front of this battery in action would be calculated at 15 yards interval between each gun.

If the number of men and horses in the above estimate be thought too extravagant it could be reduced by substituting for the waggons six two-wheeled carts similar to S. A. A. carts but fitted to carry 7,000 rounds of ammunition in holders. This arrangement would effect a saving of six drivers and twelve horses, but on the other hand the carts would not possess the mobility of the waggons, nor could the spare gunners be mounted on them, and the efficiency of the battery would thereby be impaired to a certain extent.

Lord Charles Beresford has recommended a carriage for machine guns which will enable the gunners sitting on the trail to keep up a fire in the act of retiring. This I do not think feasible, for these reasons: In the first place it seems to me that the difficulty of feeding the gun when in motion would be insurmountable; and, secondly, the motion of the gun going over any but the most level ground would cause the bullets to fly anywhere but in the required direction. If the gun was in danger of being captured while in the act of retiring it could be better defended by the carbines or revolvers of the detachment than by its own fire, wild and uncertain as it would be under the circumstances. Again, when firing limbered up at the halt the least motion of the horses would throw the trail out, while the time saved by not having to limber up before retiring would be inappreciable. Moreover by remaining limbered up when in action the limber and horses would be very much exposed, and would increase the size of the mark for the enemy's fire to a very great extent.

The only point to be decided on in forming such a battery is the nature of the machine gun to use; that question I will not discuss at present beyond saying that if the accounts that have reached me of the performance of the new maxim gun are correct, there is very little doubt but that this will be the machine gun of the future. The gun being so light (only 60lbs.) two of them might be mounted on the same carriage and worked together by the same elevating and traversing arrangement, in fact becoming to all intents and purposes a two-barrelled maxim gun.

A machine gun battery such as I have endeavoured to describe above could be used in numberless ways in a campaign, and I think it would be especially useful in accompanying cavalry in order to drive away any bodies of infantry before which the cavalry would otherwise have to fall back. When it could get within 1,700 yards of the enemy's artillery it would speedily put a battery out of action, before sustaining serious damage itself, while in defending a position against an infantry attack it would be invaluable, combining by its mobility great powers for counter attack as well as for passive defence.

It is sincerely to be hoped we shall not be behind-hand in giving the latest machine guns a fair trial, equipped in a way suited to their tactical powers, and that it is done in time of peace so that if war should break out, batteries of machine guns would be ready for service completely efficient both in their equipment and in the training of the men and horses.

G. E. BENSON, R A.

MHOW CENTRAL INDIA, *June 10th 1885.*

Friday, 17th July 1885.

MAJOR-GENERAL THE HON'BLE T. F. WILSON, C.B., in the Chair.

BRITISH OFFICERS AND THEIR WEAPONS.

By Major M. J. KING-HARMAN, B.S.C.

HAVING been honored by the Council of the Institution with an invitation to give a lecture on some subject, I did what I hope any one else similarly situated would have done—I accepted, and promised to do my best ; but I cannot help feeling that it will probably be thought presumptuous for an officer, who is an indifferent swordsman, and by no means a good shot, to offer any very pronounced opinions upon the subject that I have chosen for my lecture, and therefore I do so with the greatest diffidence.

Without going back to history for proofs, I think I may safely commence by assuming that in Great Britain and in India, the profession of arms has always been one of honour and of importance ; and I think I am right in continuing with the assumption that the importance, and consequently the honour of the profession, has been increasing in exact proportion as the wealth and property of the nation has increased, the safety of which is entirely dependent on her armed forces by sea and land. It is with reference to the commissioned officers of the land forces that I am going to trouble you with a few crude remarks this afternoon ; and I hope that, when I have concluded, if any one objects to anything that I am about to say, he will stand up and let me have it hot and strong, and further, feeling as I do, that I am somewhat of a theorist, I hope that some of you whom I see before me, whom I know to be good swordsmen, who are more skilled in war, and who have had considerable practical experience in regular ding-dong fighting, will favour us unreservedly with their opinions founded on their own experiences, which cannot fail to be of the very greatest value to the army at large : and so long as we stick to the main points, and refrain from wandering off into politics or severe criticisms of the acts and words of our responsible superiors, I do not believe that our rulers here or in England will look with disfavour upon an independent and honest expression of opinion concerning this or any other subject.

It is not uncommon to hear it stated that certain victories were due to "good generalship," but that is a phrase which does not convey much meaning to my mind, because, with all due deference to the many distinguished officers who are present to-day, I maintain that the best generalship is not of much use, unless it is backed up by a sufficient number of good troops ; and again, those troops, however good they may be individually, are not of much use unless they are led and commanded by good officers. In short the value of the army to the

country is in its officers more than in the few thousands of enlisted men in its ranks.

But who shall give a short and correct definition of that term "a good officer"? Opinions differ as to the qualifications needful to render an officer a thoroughly efficient and reliable leader and director of troops in battle. On one hand it is considered a *sine qua non* that he must have passed every examination under the sun, and be able to write the magic letters P. S. C. or P. A. C. after his name. On the other hand, we have the extremists of the old school who contend that the one thing needful is a good physical training, joined to a robust constitution and skill at arms. Of course I don't mean to imply that each member of the military community must or does hold to one or other of these opinions, but they are the extremes towards which most people run more or less violently.

What, in my humble opinion, is wanted is a happy medium between the two, a curtailment of those killing, cramming, never-ending theoretical examinations, and a judicious adding to, what for want of a better word I must call the practical training, for I cannot help thinking that officers of the army are much like other human beings in this respect, that a large proportion of them from constant study—and remember that a young officer's prospects in after-life depend very much on the amount that he studies in early life—I say that from constant study very many of them are very apt to become essentially "*thinking*" men, as opposed to "*fighting*" men or men of action, and by degrees become so engrossed in the theory of their profession that they omit or forget the minor, but still most important, practical details—I mean that they study the theory of fighting, but not actual fighting itself.

Of what avail is it to an officer if he has passed innumerable examinations and is yet unable to defend himself when attacked? I of course don't go the length of saying that an officer who is unacquainted with the use of sword or pistol is totally unfit to lead men, for it is well known that many good leaders and commanders in former days carried nothing but a good strong stick in action. Such men, however, were the exceptions to the rule; but I think that, as in a street row, so in a battle, a man who does not know how to defend himself should keep or be kept out of such rows, and would probably be more profitably employed in one of the civil departments of the army—by this I mean no disrespect to those Departments, so I hope no one will take offence at the remark. And judging of others by myself, I know that if I was a private soldier I would far sooner follow a fighting officer than a reading one—not that the one is likely to be any bolder or pluckier than the other, but simply because I should feel pretty confident that the fighting officer could, and would, force a way for himself and his company if it came to a hand-to-hand tussle, whereas the other would most probably fall before his first opponent, and leave his company without a leader. Moreover, we should not lose sight of the fact that a man who can defend himself will also be able to defend others who may be disabled, and he can also teach others.

I do not think that there is any positive proof that in olden days

officers were more proficient in the use of their weapons than they are now; but, considering that duelling was in force and in fashion, that there was more hand-to-hand fighting in battle, and that there was less security of life generally everywhere than exists now-a-days, it is only reasonable, I think, to infer that they were so.

It has always seemed to me a very strange thing that, although there is constantly continued and even increasing expenditure of time, trouble and money on the instruction of the rank and file of the army in the use of their weapons, yet no attention whatever is paid to the actual fighting capabilities of the commissioned officers; and it seems to be taken for granted, either that they are quite perfect in the use of their weapons, or else that skill in the use of them is a matter of no importance.

The Queen's Regulations contain a distinct order, which is repeated in the Army Regulations of the three Indian Presidencies, that all officers of Cavalry and Infantry—those of the engineers and artillery being for some unknown reason excluded—on first joining their regiments or depôts are to be put through a course of instruction in fencing; and, further, that all other officers should be encouraged to practise this exercise as much as possible during their leisure hours; but in the case of Infantry Officers, the instruction is only to take place at stations where Military Gymnastics have to be held, and from this order I infer that it was and is intended that every officer in the army shall be an efficient swordsman. Now, as far as I can ascertain, the actual obligatory part of the order is carried out with more or less care in most regiments, but the voluntary portion of it is almost entirely neglected; consequently, as a rule, an officer from want of practice very soon forgets what little he learnt on first joining the service. I may be wrong on this point, but as the proof of the pudding is in the eating, it would be interesting to ascertain by actual trial at any Cantonment in the plains or even in Simla itself, how many officers there are who could be relied on to stop the rush of a Ghazee, either with his sword or pistol.

So impressed was I with the necessity that existed for endeavouring to improve as much as possible the fighting qualities and consequent value of all officers of the army, that about six years ago, with the assistance of Major Hallows, who was then Inspector of Gymnasia, Major A. D. Anderson, R. A., and Captain G. Haines, A. D. C., I managed to start a Gymnastic Fencing School at Simla for which the Government of India supplied most of the apparatus. Many kind friends came forward and helped us with subscriptions and donations, but very few joined the class as working pupils, and I am sorry to say that it was not a success. Whether that was due to want of energy on the part of the Honorary Secretary or to shyness or apathy on the part of the residents and visitors, or to a mixture of both, I am not prepared to say. Anyhow I should like very much to see it re-established, and also to see similar institutions, with a pistol range attached, started by Government at every large station in the plains, in which all officers, including civilians and unemployed officers, could be taught how to use their weapons.

I am not one of those who think that the men of the present generation are physically inferior to their fathers and grandfathers ; on the contrary, I think that in some respects they are, if anything, rather superior. For instance, more attention is now given to gymnastics, running, swimming, &c., at schools than was the case 25 years ago, and amongst the junior officers of the army it is the exception to find one who is not good at all field sports and manly games, but unfortunately fighting has gone out of fashion altogether, and at my old school, Cheltenham, there are not now as many fights in a whole year as there used to be formerly in one week ; the boy is not now taught the noble art of self-defence, but on the contrary he is taught other ways of settling his quarrels : the first thing that I had to do when I went to school was to fight a boy bigger than myself, but now-a-days fighting is the last thing that a boy thinks about ; not because his nature has changed, but simply because in that respect he is differently brought up.

Personal bravery and self-reliance at all times, but particularly in times of danger, are two of the world-renowned qualities of Englishmen ; but still I cannot help thinking that that early training to be a non-combatant must in after years interfere very much with the man's value as a combatant officer and as a leader in battle, unless, after joining the service, his natural pugnacity and sagacity are judiciously developed and encouraged by careful instruction and constant practice in the use of his weapons.

Now, if you will allow that there is any truth in what I have said so far as applicable to officers in general, I think you will agree with me that they apply with double force to us in India, more especially to officers serving with native regiments, who are so few in number that the life of each one is of the greatest possible value to the State.

I do not suppose any one ever heard of a sane man who was totally unacquainted with shooting deliberately going out to attack a tiger or any other dangerous wild beast ; and yet every time that a British force goes into action, more particularly against such foes as are usually met with in India and Africa, there are hundreds of invaluable officers exposing their lives to just as great dangers, with the most reckless bravery, quite unmindful of the fact that soldiers without leaders and commanders are liable to degenerate into a rabble, and that, therefore, the death of each officer is an enormous gain to the enemy.

The only officially recognised weapon for officers of the British Imperial Army is the sword, or rather I ought to say that the sword is the only recognised weapon for the Home and Colonial Army, because, within the last few months, thanks to Sir Charles MacGregor, the Government of India have ordered every officer proceeding on active service to carry a revolver also ; this is of course a great step in the right direction, but I venture to think that many more such steps are still required, and my special object in addressing you now is, not so much to state my own ideas, as to ascertain in the most public manner

possible the ideas of other and more competent officers, what those steps should be.

I am aware that this matter has quite recently received a certain amount of attention at Army Head Quarters, and that orders will shortly be issued for the partial instruction of certain grades of officers in the use of single stick and revolver ; but as, in my humble opinion, the subject is one of national importance, and considering that no orders have yet been issued regarding it, I hope that I shall not be deemed wanting in respect of discipline for drawing your attention to it, even in this imperfect manner.

We are told, and with truth, in the official work on Gymnastics and Fencing, that the perfect use of any weapon can only be acquired by practising its movements with another weapon which resembles and represents it in all essentials ; and yet in the face of that we see the use of the sword pretended to be taught by practising with a light foil which in no way resembles it, and which does not represent it in any essential. This of course you can all see for yourselves if you will only take the trouble to compare the length, weight, shape and feel of the two weapons ; but I would draw your special attention to the handles ; that of the foil is long, four-sided and slightly curved to correspond with the conformation of the palm of the hand, and it is so shaped because it presents the kind of handle that can be most securely grasped. Moreover, the whole hand and wrist are completely free ; but how different is the handle of the regulation sword in every respect, the hilt of which is, to my mind, worse than useless, for if it is made of brass it is no protection against the straight cut of a sharp sword, and if of steel the blow would glance off on to the wrist or arm. There are also two other objections to the regulation hilt, one being that it confines the hand and wrist so that it is almost impossible to hold the sword in such a manner as to be able to parry a downward cut or a thrust, and return sharp with the point ; the other is that it renders the carriage of the sword in a frog or with short slings a most uncomfortable proceeding.

We all know that fencing is simply the art of using the small sword or rapier which are weapons that can be used for thrusting only, but as none of our officers are armed with such weapons, unless perhaps a few have retained the small swords of their fathers, of what use to them is fencing as now taught ? Therefore I would recommend, with due deference, that either the system and weapon of instruction should be completely changed, or else that the regulation sword for all officers and for cavalry soldiers, should be altered so as to make it a thrusting weapon only. I should infinitely prefer the latter, for the simple reason that the point is so far more deadly than the edge ; but in any case the weapon of instruction, if it is to be of any real use, must be made to represent the fighting weapon more nearly than the foil does the present regulation swords.

There is no doubt that it is the nature of an untaught Englishman, when assaulting friend or foe, to hit or beat him, raising his arm above his head for that purpose, for which reason many people advise that

swordsmanship should be taught by means of instruction in single stick only, and I have good reason to believe that my gallant and distinguished friend, Colonel Bushman, C.B., was the first to take up that view in earnest, and that it is solely due to him that the Cavalry, and the Aldershot Gymnasium is indebted for the small amount of single stick instruction that is permitted, though not officially recognised, in England. I cannot, however, agree with this view, for two reasons—first, because, as I said before, I consider the point far more effective than the edge ; and, secondly, because our regulation swords are not, properly speaking, cutting weapons, that is to say, the blades and hilts are not properly constructed for cutting. Some may say that it must be easier and better in every way to educate in the direction of a man's natural instincts than to upset them all and endeavour to teach him something quite different, which argument sounds plausible enough at first, I own, but this I oppose for the following reasons.

Look at the ordinary English country bumpkin fighting with his fists : you have all seen them fight at one time or other, and I am sure many of you have fought with them yourselves, and you know the way they set to work with right foot and hand in front, hitting round arm and beating about wildly, and you know how it only requires one nicely planted left-hander straight from the shoulder to send the big wild hitting mass of humanity flat on the ground. Then take one of those men and have him taught boxing, if only for an hour a day, for three months, and you transform him into a very different being. Look again at the ordinary infantry soldier, how easily he is taught the use of the bayonet, and made more than a match for any cutting swordsman either mounted or on foot. Well, I contend that it is just the same with the sword. A man's first and natural idea is to hit or beat his adversary lifting his hand as high as he can, so as to deliver the hardest possible blow ; let such a man be a giant in size and strength, yet what chance has he against an opponent, no matter how small, armed with a rapier ? Absolutely none whatever ; he would be run through before he had time to raise his hand even, and you might teach that man single stick all his life without improving his chance one little bit ; but arm him with a long straight three-square sword with a properly shaped handle, and teach him fencing with a somewhat similar weapon, and you change him at once into a most formidable opponent and make him superior to any cutting swordsman in the world.

If, however, it is considered necessary to arm officers and men with a cutting sword, then I maintain that the weapon must have a slightly curved, broad, flat blade, capable of receiving a keen edge, and always kept sharp ; and that the weapon of instruction must resemble it as closely as possible.

But independently of that, I maintain that it is no such easy matter as some think to deliver a true straight cut with the edge of a sword, as any one knows who has tried lead-cutting at a Gymnasium. It requires special teaching and a good deal of practice, and no amount of instruction with single sticks will teach that. By a badly delivered blow you may chance to hurt your adversary, but you won't kill or disable him, and you run very great risk of breaking your own sword, and there is

no doubt that men have often lost their lives in that way. Some here may remember the case of a very smart officer of a distinguished cavalry regiment who, during one of the engagements of the first phase of the late Afghan war, broke his sword over the head of a mounted Afghan, but fortunately the man was galloping away as hard as his horse could carry him, and did not attempt to make use of his opportunity. If that officer had been armed with a sword made for thrusting only, and had any knowledge of its use, he would have killed his man and been still equally ready to kill a dozen more.

We have also heard of an officer breaking his sword when trying to cut a man down, and then felling his opponent by a blow in the face with the hilt.

But many may ask why I should bother myself about such things, for when does a British officer wear his sword, and what use does he make of it? To which I would reply that in India he wears it as seldom as possible—in fact very many appear to be quite ashamed to be seen wearing it at all except when they are absolutely obliged to do so, and makes his syce carry it for him as often as he possibly can, and he makes the very worst possible use of it; but I think and hope that if he was armed with a really good reliable weapon and was well skilled in its use, he would wear it oftener, and with greater pride and pleasure than he does now, and would pay more attention to the condition of the blade than he does now to the polish of the scabbard. Others may say, but what about the sword exercise which we are all constantly practised in? Well, all I can say about it is that the mounted exercises, especially the pursuing practice, are extremely pretty to look at and perfectly useless as a means of instruction in the real use of the sword, and as regards the dismounted practice, known as the Infantry Sword Exercise, I don't think I know of a more affecting sight than a body of English officers going through that performance before the reviewing general at his annual inspection.

In return I should like to ask why it is that regiments of Bengal and Punjab Cavalry, who are armed with the sharpest and best-shaped cutting swords that can be made, are not made to go through those very pretty parade sword exercises? My own answer, if asked such a question, would be that the men being born swordsmen the whole thing would be a farce, which on occasions might, in the case of a recruit or a restive horse, produce a tragedy; but not being a cavalry officer I am not competent to give a reply at all; so I hope that some officer of our native cavalry regiments will favour us with the real reason.

Before leaving this part of my subject I should like to draw your attention to the very great difference which exists between the native swordsmen, no matter what part of the country he comes from, and the average British officer, in what I may call the personal feeling of the individual towards the weapon on which his life may at any moment depend. How indifferent the former is to the appearance of his scabbard, but how careful he is that the blade is sharp and true and free from rust; and how indifferent the latter is to the quality and

condition of the blade, but how very careful he is that the scabbard is bright and clean.

Then, again, look at the size, shape and weight of our officers' swords. How many of these are exactly in accordance with the regulations, and as regards the quality of the blade there are absolutely no regulations whatever. No responsibility attaches to any one concerning those points, and so long as the hilt and scabbard appear correct, no one troubles himself about the blade. Doubtless many who hear or read this will be most indignant, and what will be their feelings when I tell them that half their swords are worthless rubbish I cannot say, but such is the case. Few of them are capable of receiving a hard cut from a tulwar, of taking and keeping an edge that would take a man's arm off, or of standing the ordinary tests of spring and block which are applied to the swords made by Mr. Mole of Birmingham, with which the rank and file of the mounted branches are supplied. I think that whatever pattern of sword is decided on for officers or men, the first thing to settle is that it should be either a thrusting or cutting weapon. Compromises are worse than useless, they are dangerous; the second is that all officers should be compelled to equip themselves with such swords of regulation size and quality and that commanding officers should be held responsible that each such sword is proved and tested, not only before being taken into wear, but also once every year by the Civil Master Armourer when he examines and tests the regimental rifles. I would also add here that the annual examination and testing of all swords and lances belonging to a cavalry regiment is just as necessary, in my opinion, as the examination of the carbines. I hope that cavalry officers here to-day will correct me if I am wrong, and support me if they agree with me on that point.

As many may wonder, and perhaps ask, what I expect to gain by all this, or if I imagine for a moment that anything I say here will have any chance of causing the military authorities to alter the patterns of weapons that have been settled long ago by competent authorities, I may state at once that of course personally I can gain nothing, but I certainly do hope that this will lead to some official enquiry being made into the subject. Committees in England are, as a rule, just as competent, or just as incompetent, whichever way you like to put it, as Committees in India; and the last Committee assembled at Mr. Mole's Sword Factory in Birmingham, shortly before I left home, to decide the correct pattern of sword requisite for light infantry, was no exception to this rule, as I think you will acknowledge when I tell you that the head manager of Messrs. Wilkinson & Co.'s sword, gun and pistol shop was specially summoned for the purpose of assisting the members with his advice. You will perhaps say that that showed the good sense of the Committee, which I grant, but it also showed their incompetence.

Much more fuss is made about the sword scabbard than about the sword itself—whether it should be of metal, or of wood covered with leather, &c. I confess that I have no choice so long as it does not hurt the blade and combines lightness with strength.

A good serviceable sword belt is of course absolutely necessary, but if

I once begin to talk about that I should be only wasting your time, besides wandering from my subject proper into that much vexed and somewhat dangerous subject of uniform. But I think the sword knot is a legitimate subject for discussion; and I often wonder if an infantry officer knows what it is intended for. Anyhow if he does know, he is most careful not to make use of his knowledge, but exercises the greatest care and ingenuity in wrapping it round and round and in and out of the sword hilt, so that it can only be undone with difficulty after a considerable expenditure of time and patience. In the artillery and cavalry the use of this small but valuable article of equipment is thoroughly understood and practised. Why should it not be so also in the infantry?

Intimately connected with the question of swords is that of defensive armour or chain protectors of some sort. And for my part I not only see no objection to the wear of such articles, but I consider that it is the bounden duty of every officer to adopt every means in his power, short of running away, to protect himself and to preserve his life for the service of his country; and therefore I think that, whether proficiency in the use of sword and pistol is insisted on or not, all officers should be obliged to wear something of the sort. What that something should be I am not prepared to say, but if the idea was once approved of, the remainder would be arranged doubtless by the usual Committee.

In former days the Epaulet was worn for use as well as for show, but they have long since been abolished, and are now replaced by useless, tawdry shoulder cord. Now what objection could there be to add one or more small chains or piece of chain mail to our present shoulder cords, and so make them useful?

I dare say there are many here who, like myself, have not seen a regulation Epaulet for a long time, and probably some of you have never seen one at all. So, through the kindness of Colonel Sanford I have been able to produce a pair here to-day for your inspection, which, though a little large for the present style of great coat, are I think you will own, handsome adjuncts to any uniform, and owing to the nine small chains in each, effective protectors against a sword cut.

It is almost needless to remind you that of late years the limbs, if not the lives, of several valuable officers have been saved by wearing chain protectors, whilst it is equally well known that during the Mutiny, and of late in Egypt, many have been disabled owing to the want of them.

I have also placed here for inspection a few specimens of swords. One is my own regulation sword; the one with the steel cross handle was my own idea of a combined cut and thrust sword and was made for me by Messrs. Wilkinson & Co.

The innocent looking walking stick contains a very old and valuable Spanish blade, which I should not like to have through my body.

There is also an ordinary fencing foil, and a lead-cutting sword, in order that you may handle them and recognise the great differences that exist between each of them, and our ordinary regulation swords.

Now for a few words about pistols. I believe that in every other European army the revolver forms part of each officer's equipment, and that each country has its own special pattern ; but in the English army, although there is a special pattern for issue to such ranks and grades as are supplied gratis by Government, as well as for sale to such officers as are permitted, and who care to purchase them, yet the revolver is not officially recognised as forming part of a British officer's equipment anywhere out of India, although, as I said before, that important step has been taken in India within the past few months. Now I think there are few who will disagree with me when I express my hope that before long two more very important steps will be taken in this matter, of which the first would be an order compelling every combatant and non-combatant officer in the army to provide himself with a revolver of a certain specified authorised pattern, and to have always in his possession a certain fixed quantity of ammunition for it, in a serviceable condition ; and that, if at any time hereafter Government considers it necessary to alter materially the pattern of either one or the other, a new pistol, or fresh ammunition, should be issued to all free of cost.

Secondly, that every officer so provided should be compelled to fire not less than 40 or 50 rounds annually, half to be fired with one hand and half with the other ; and that all revolvers be examined once a year by the Civil Master Armourer to see that they are in good order. Of what use is a revolver to a man if he cannot and will not try even to learn to shoot with it ? How many shots, I wonder, have any of us fired from our revolvers during this year ? I myself have certainly not fired more than 30 rounds, and that was while I was unemployed at Delhi and had nothing else to do. I am given to understand that orders will be shortly issued for all officers to fire 24 rounds annually from revolvers at present in their possession, which will get them into the habit of firing off such weapons as they have got, but when the time comes I strongly suspect that it will be found that in too many cases the revolvers are very much like the swords, useless gimcrack things that will not take Government ammunition ; and that the private made ammunition used with them is harmless rubbish that has been kept for years. Until within a very short time ago I was in that same awkward predicament myself of having a very nice looking and accurate weapon, but I found that it would not take the Government cartridge, and its own cartridge was not powerful to stop a man unless hit in a vital part ; but now I have got one of Webley's last pattern—indeed it is the first one of the kind that has ever been sent to India—which will take any cartridge of the same calibre which does not exceed the length of the chamber. Now when it is remembered that the service revolver cartridge, known as the Enfield Mark III, is the only ammunition that can be procured on service, I think it will be granted that each officer's pistol should be able to take it, and if it does not do so, he should at once provide himself with one that does ; therefore let me ask each one of you to try for himself as soon as possible. If you will examine the pistols on this table you will see exactly what I mean.

Many people advocate the supply to all officers, on payment, of

Government regulation revolvers from the Arsenals, but I object to that for two reasons : first, because it would interfere with private trade ; and, secondly, because the Enfield pistols are all made of one size and shape, and therefore would not suit everybody, besides possessing, in my opinion, other defects both in construction and in sighting.*

This new revolver of mine was, as I said before, made by Webley, the famous Birmingham Gun-maker, who makes all the revolvers for the Army and Navy Co-operative Stores. Mr. Henry Webley, the younger brother, is the champion pistol shot of the world, having beaten the famous American Ira Pain, besides being an extremely clever practical man, and he specially superintends the revolver-making part of the business. I believe their Agents in India are Manton & Co., of Calcutta. There are of course other good makers who may perhaps turn out as good weapons as Webley, but during the time I was in England last year I had exceptional opportunities of seeing who were the best men, and I neither saw nor heard of any who could beat him.

This is doubtless the time and the place for demonstrating scientifically and concisely the special advantages that one kind of revolver by one maker has over another kind by the same or by a different maker, but I do not feel competent to do so.

I consider the chief points of a revolver to be strength and simplicity of all the component parts ; a barrel sufficiently long and a powder charge sufficiently strong to stop a man at 80 yards distance ; a chamber that will take the service cartridge, and a stock that fits the hand and suits the eye ; and if you get these points satisfactory I think you may be sure that all the rest is right. The stock is a most important part, and many have been the controversies over the shape, but the best way is to try several kinds and choose the one that suits you best ; remember that all men's hands are not the same size or shape, and unless the stock suits you, your shooting will never be uniform, and seldom good. You will see on the table a few different kinds of revolvers, all of them good in their way, but some take the Government cartridge and the others will not—a most important and very serious defect which I think worthy the attention of Government. You will also notice the difference in size between the cartridges.

Every officer should be obliged to have a lanyard of some sort attached to his revolver, either a short one to go round the wrist, or a long one to go round the neck ; and I think some definite orders are necessary regarding the ammunition pouch, and the number of rounds to be carried in it : also as to what weight, if any, should be allowed in the Field Service Kit for spare ammunition.

Many may, and perhaps will, object to all that I have just said, on the plea that officers are very seldom engaged now-a-days in hand-to-

* One of the great drawbacks to voluntary revolver practice in India is the great distance of Rifle range butts from the Officers' Quarters, and on this account I proposed having a short range attached to each school of Arms in all Stations : the only other alternative would be to have one close alongside every Regimental Orderly Room, where practice could be carried on after parade for 10 minutes or so, without trouble to any one.

hand fighting, and that quite 75 per cent. of the losses in action are from rifle fire ; and I admit that, to a certain extent, such men can make their case good, but I do not think that is any reason why the remaining 25 per cent., or indeed why even one life should be sacrificed for want of a little instruction.

Trained officers don't grow like leaves on a tree, and in native regiments they are so few in number and so difficult to replace that everything should be done that is possible to preserve their lives.

Any how, if I have failed through the weakness of my arguments and the poorness of my language, to convince you that possession of suitable and reliable weapons, combined with a thorough knowledge of their use, is essential as forming one of the qualifications indispensable to a good officer, yet I, at any rate, score one point when I assert that they can do him no harm, and no absolute disadvantage can possibly accrue to the State thereby.

We officers of the army are taken the greatest care of in some respects : our theoretical education appears to increase every year ; we are dressed up in Khakee so as to prevent the possibility of an enemy seeing us a mile or two off, and of our own men recognising us when close at hand, which are no doubt wise and useful precautions, but up to the present time we have never been made to provide ourselves with good weapons, nor have we been taught the use of them.*

Now that I have come to the end of my subject, I must confess to feeling myself somewhat in the position of an ambitious French cook, who, imagining that he has hit upon a grand idea for a new dish that will create a sensation, rushes down to the kitchen to carry it out, but finds after an hour's toil that he has produced nothing but a tough dry beefsteak. However I hope that some of you will now come to my assistance with some very necessary sauce and spice.

My conscience is certainly clear on one point, namely, that in venturing to bring this subject to your notice, I have done no harm to any one.

* Since this was written some orders have been issued from Army Head Quarters for instruction of officers in the use of sticks, foils and pistols which will perhaps prove beneficial to a few ; but much more is required if any real good is to be done.—M. J. K.-H.

OCCASIONAL PAPERS.

THE PRESERVATION OF CANTONMENTS AS GRASS FARMS.

By LIEUT. S. C. F. PEILE, B S.C., *Assistant Commissary General.*

THERE are few questions so vexed, or the solution of which is so important, as the best and cheapest means of foraging the horses of the Mounted Corps in this country. In Bengal the grass-cutter system has been established; and certainly the keeping up of a regular corps of men to cut grass is undoubtedly a better plan than that in vogue in the Bombay and Madras Presidencies, where the wives of the horsekeepers (*saesses*) are employed on this duty, with the natural result that the horses suffer. The women are of course under no sort of discipline or control beyond the pressure that can be put upon their husbands, and are moreover physically incapable of doing the work of men. In war the employment of women would for obvious reasons be impossible; and hence on the first outbreak of hostilities large quantities of grass or hay or other forage have to be purchased at most exorbitant rates, which are of course enhanced by the prospect of war.

We can thus dismiss the Bombay and Madras systems as impracticable; and in considering the Bengal method of foraging horses, note the various defects that appear in it, with what seem the natural remedies. The first question that presents itself is the following:—

"Is it absolutely necessary that grass-cutters should be kept up?" and the obvious answer is, "Yes, unless forage is procurable not only at a cheaper rate than that for which an establishment of grass-cutters can be kept up, but also in sufficient quantities for despatch to the theatre of war; and in such localities as would enable Mounted Corps to draw forage sufficient for their requirements during a march without the necessity of keeping a staff of men to cut grass daily."

Now as there is no regular trade in these articles, grass and hay have a fictitious value; and whenever it is necessary, owing to a temporary deficiency of grass-cutters for Mounted Corps, to draw forage from the Commissariat, the prices which that department have to pay in the bazaar for the required articles are far in excess of what the grass-cutter would cut the same quantity for; and hence we may conclude that under existing circumstances forage is not procurable for a cheaper rate than it can be cut under regimental arrangements, nor are there any depôts of supply from which forage could be sent to the theatre of war or drawn on by regiments on the march. Hence we must conclude that the retention of the grass-cutter is necessary.

Looking at the question from a politico-economical point of view, however, it will be seen that the present system of sending the grass-cutters into the field to cut grass is so unjust and objectionable to the ryot that it must be discontinued. Grass, too, is getting so scarce in some districts that, unless some means are taken for preserving it, it will become unprocurable. The means we have now to consider are those by which the grass-cutter can still be employed in case his services be needed during war time, but it must be so employed as to obviate the necessity of his trespassing on the fields of the villagers, and the means by which forage can be grown in such quantities and stored at various

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—
25
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depôts in such a way that it will be possible if deemed desirable to do away with the grass-cutter altogether.

As a solution of the problem at issue I recommend the "*Preservation of Cantonment lands as grass farms*" on the lines adopted by Major-General Sir H. Macpherson at Allahabad, and as I have now been for some eighteen months under that distinguished officer's orders in charge of the Allahabad Farms, and have watched their growth from almost barren fields into lands yielding a heavy crop of grass, I trust that my unwavering belief in this system and lengthened advocacy for its general adoption may be treated with all due consideration.

I do not propose entering largely into statistics, but will merely quote a few facts that show the benefits that accrue to lands from preservation even in so short a time as eighteen months, and generally the lines on which such a scheme as the ones proposed should be laid, and the reasons why it cannot fail to prove a success.

Income derived from Cantonment Lands.—Now if it were determined to turn all Cantonment lands into grass farms, it would be perfectly equitable for Government to take those lands on lease from the Cantonment Committee at an average yearly rental calculated at what they had let for during the previous five years.

It would be the duty of the officer deputed to manage the farms to examine his land carefully, and let out direct to cultivators or villagers such lands as it was deemed inexpedient just then to include in the grass preserves. He would probably find that by letting out judiciously the lands far from his care, he would get sufficient by this and grazing fees to pay the total rent.

N.B.—He is now financially safe, having secured an income sufficient to meet his liabilities on the score of rent. It will now depend on his management and knowledge of farming what income he will derive from the lands that he proposes to treat as grass preserves. The first year or two his profits will naturally be small, and he should spend them in the improvement of his land; in its preservation by fences, in ploughing, top dressing, and sowing grass. The third year, and especially if there is a good rainfall, the grass yielded by the farms and the consequent profit thereon will be a surprise to him.

The profits on the grass farm at Allahabad have this year been Rs. 28,000.

That there will be a profit is obvious from the following figures:—

	Rs.	As.	P.
Grass can be cut at an average per maund	...	0	0 9
The price-current rate of grass (green) in the bazaar	...	0	4 0
averages, say per maund	...	0	4 0
Hay can be saved and stacked at per maund of hay	...	0	12 0
The price of dry grass on an average is per maund	...	0	8 0
The price of <i>bhoosa</i>	...	0	8 0

Now we will suppose that at first the officer in charge of the grass farm deals with the transport animals alone. These animals are ordinarily fed all the year round on *bhoosa*, getting 20lbs. and 14lbs. of that article, according to class of bullock.

When green grass is issued, 35lbs. is considered to be equivalent to 20lbs. *bhoosa*, and hence it is equitable for the grass officer to charge for his 35lbs of grass either the price-current rate of green grass in the bazaar or exactly what it would have cost Government to purchase 20lbs. of *bhoosa*.

In the first case for 35lbs. of green grass, which originally cost $3\frac{1}{2}$ of a pie, he gets 1 anna 9 pie, or something over 400 per cent. profit.

In the second case for 35lbs. of green grass, which originally cost $3\frac{1}{2}$ of a pie, he gets $1\frac{1}{2}$ of an anna, or something over 300 per cent. profit.

He should charge the latter rate as it is cheaper for Government, and does not increase the Transport Budget. Now let us consider his profits on hay: in the case of a first class bullock 30lbs. dry grass, 20lbs. *bhoosa*.

If the grass officer charge price-current bazaar rates for 30lbs. dry grass, which originally cost $1\frac{1}{2}$ annas, he would get for it $4\frac{1}{2}$ annas, or 200 per cent. profit.

But as the *bhoosa* rate is more favourable to the transport he should charge that only, and here he gets two annas for 30lbs. of hay which costs him $1\frac{1}{2}$ annas, or makes 33 per cent. profit.

Few could contend that 30lbs. of really good hay is not as good as an equal quantity of *bhoosa*, and hence the grass officer is in the latter case giving a ration half as big again as the regulated one for 50 per cent. less in price; as of course the profit would at some period be credited to Government.

Green grass is issued for about six months, and hay for the other six months; and so, presuming there were 100 bullocks at the station where the grass farms were being worked, the grass officer would make by issuing green grass and hay at the same price that Government would have to pay for *bhoosa*—for green grass about one anna one pie per bullock or over Rs. 1,200 profit for six months.

For hay half anna per bullock, or Rs. 560 profit for the other six months. Total profit in the year on 100 bullocks Rs. 1,760, or sufficient to keep up and feed 41 more bullocks at that station, which in these days, when there probably exists a necessity to keep up a larger amount of transport, is a point that cannot be overlooked.

I have purposely under-estimated, but if we take the average bazaar rates of *bhoosa* as ten annas per maund, it will be seen that on the profits accruing from sale of fodder to the transport, the grass officer could feed free of cost as regards fodder 50 per cent. extra animals if kept up at that station.

N.B.—The contract rate of *bhoosa* at Allahabad for 1884-85 was thirteen annas per 100lbs.

Having dealt with the grass preserves in their relation with the Transport Department, let us look at their position with regard to Mounted Corps. It will be simpler to take a Battery of Field Artillery as a basis of calculation than any other Corps.

It is of course impracticable for Government to purchase grass even from its own farm, while it keeps up an establishment of men to cut grass.

This establishment consists of 110 men (double and single) at Rs. 4 per man per mensem, or Rs. 440 per month. Let us see what the effect would be of handing these men over for discipline, payment and work to the grass officer. Their pay would still be drawn from Government and redibursed to the men. I have calculated that all the year round these men could cut at the very least three maunds per man per diem; or 9,900 maunds per month. The issues to a Battery are 35lbs. green grass per horse, or 1,400 maunds per Battery per mensem, leaving during a month in which green grass were issued 8,492 maunds of green grass cut free of cost, and which could be issued to transport animals at a charge of Rs. 2,426; for if 20lbs *bhoosa* equal 35lbs. green grass—

35 : 20 :: 8,492 to the total number mds. *bhoosa*.

4,852 at 8 annas per maund = Rs. 2,426.

Of hay the issue for a month to a Battery are 805 maunds at 20lbs. per horse per diem

The grass-cutter would cut as shewn before 9,900 maunds of green grass, which represents 3,300 maunds of hay. Therefore, after issuing the total requirements of a Battery for one month free of cost, the grass officer would have for sale to transport animals 2,495 maunds of hay.

But hay : *bhoosa* :: 20 : 30.

30 : 20 :: 2,495 : number maunds *bhoosa* chargeable.

1,663 maunds *bhoosa* or Rs. 831-8.

∴ Rs. 2,426 + 831-8 × 6 = profits during the year by employment of grass-cutters of a Battery on grass farm or Rs. 19,545, or nearly three times as much as Government at present pay yearly to the grass-cutter of our Field Battery. With a Cavalry Regiment of course the profits would be more than trebled.

Compensation to Bengal Cavalry.—A large sum is paid by Government yearly to Bengal Cavalry as compensation when a horse's feed runs over Rs. 13-8. Under these circumstances the Bengal Cavalry purchase their green or dry grass in the bazaar at the price-current rate. As they have to buy, why should they not come to the grass farm, an uncontaminated market, which will if necessary sell at an anna a maund less than the bazaar.

Hay is four annas a maund nett farm rates ; price current rates are twelve annas. The scheme will sell to Bengal Cavalry at eleven annas, giving the sowar the benefit of one anna a maund for dealing with them, and at the same time repaying to the coffers of Government $\frac{1}{2}$ of the original grant of compensation, thereby saving Government more than half what it now spends in compensation, and at the same time making the sowar a present of $\frac{1}{2}$ of his compensation.

The conversion of cantonments into grass preserves has, if my figures and facts cannot be contested, the following advantages :—

(1.) It will enable Government to keep up half as much transport again as it now keeps for an equal cost, or will reduce by nearly half the cost of foraging the present transport.

(2.) It will reduce the amount expended on foraging British Cavalry and Royal Artillery by three-fourths, a saving of 75 per cent.

(3.) It will effect a saving of more than one-half in the money now expended in compensation to Bengal Cavalry.

This is always provided the grass farms are first well started, and then properly supervised ; and that every help is given to grass officer by all concerned, otherwise no estimate can be formed of what the result will be.

CRYPTOGRAPHY.

By COL. W. L. YONGE, R.A.

CRYPTOGRAPHY is a very large subject, and already possesses a literature of its own, but it is my intention on the present occasion only to refer to one particular application of cryptography to military purposes. For many years the subject has engaged my attention, more especially in connection with my system of Visual Signalling by means of the Clock Vane which has for many years been adopted as the official system of Austria, and, I believe, of Italy also, but which finds no favour with the British authorities. I have thus read a good deal about cryptography, although I do not pretend to be in any sense expert in the art.

The British War Office has not neglected the subject of cryptography in the abstract ; but I am not aware that any attempt has been made to utilise the art on sudden emergency. Doubtless an officer in charge of the signalling

parties of rival forces at "autumn manœuvres" will prearrange some system of secret signalling to be adopted for the particular operations in hand; but I doubt if any two independent parties could open communication by cypher signalling, for of course it would be out of the question to convey by signal to each other the system of cypher signalling about to be established, for such intimation would become public property, and thus fail to ensure secrecy.

I was much struck on reading in the papers about the time of the fall of Khartoum that General Gordon in one of his letters to (I think) Sir E. Baring begged him to send him no more letters in cypher as he could not read them, the cypher key having been taken away by Colonel Stewart. Although I have no information as to the nature of the particular system now in use between Cairo and Khartoum, I think I may assume that it was probably of a complicated nature, or probably a code book in use by the Foreign Office, or a cypher dictionary; for had it been of any moderately simple form it would doubtless have been copied by General Gordon before parting with his sole copy. That no such copy was left in Khartoum convinces me that the cypher in use was not a simple one easily remembered. However, be this as it may, the result was that General Gordon was entirely without the means of communicating with Cairo or the relieving force. It will be remembered that questions were seriously asked in Parliament as to whether it was not the fact that the messages which were actually received from Gordon should not be interpreted in a directly contrary sense as supposedly arranged by Gordon before he left London. There was then practically no means of safe communication with Gordon, for messages in any vernacular would have given as much information to the enemy as to General Gordon.

I would propose to try to remedy this obvious want of some means of secret communication between detached parties of British troops. I would have some system of cryptography officially designated by authority, and every officer in the army, without exception, should be made acquainted with this system.

I do not here mean to insist upon any particular system, although I have decided opinions on the subject, but the conditions necessary to insist upon in such a system are—first, extreme simplicity; secondly, such as can be easily remembered without the assistance of written notes; and, thirdly, that the construction of the cypher should depend on the choice of one of three or four easily remembered "key words" "or key sentences."

It may be urged that key words so widely known would soon be universally known to friend and foe alike. I do not think so. Officers when entrusted with a confidential secret of such importance can be relied upon to maintain secrecy, as in the case of a parole or countersign. It is not found that Freemasons have any difficulty in keeping secret their craft signs. A more reasonable objection would be that officers would forget both the system and the key words, but notwithstanding the bugbear of examinations, I would require Commanding Officers of Corps periodically to examine their officers as to their acquaintance with the system and its key words, and in garrisons it should be the duty of the staff officer of the Q. M. G.'s Department to ascertain that all Commanding Officers and Adjutants were themselves acquainted with the Cypher Code.

This being prearranged, any officer could at once open communication with any other officer without fear of his communication being known to improper persons.

In addition to the universal or army cypher I would suggest that every regiment in the reserve should have in addition its own cypher on the official system, but with its *regimental* key word.

Take the case of the Royal Artillery, one or more of whose officers are to be found in every camp or garrison throughout the British Empire.

Had the R. A. such a regimental cypher or secret code, there would be no

difficulty in communicating from one detachment to another. Had the Corps of Royal Engineers been in the habit of using a regimental cypher, communication could have been readily secured between General Gordon and the relieving force.

It is for those in authority to consider whether *le jeu vaut la chandelle*. I personally think it worth any amount of trouble in organisation to secure results such as I anticipate would accrue on the adoption of a universal army cypher such as I suggest. I consider the cypher given in the Soldier's Pocket Book to be the one best adapted for the purpose indicated, but it requires some modification, which would render it difficult, if not impossible, of detection, but without rendering it too complicated to be remembered on emergency. There are several simple systems which would answer the purpose, but I consider the cypher known to experts as Playfair's Cypher to be the best, as being extremely simple and easily remembered and requiring no written notes.

A BLANK AMMUNITION TARGET.

BY MAJOR L. B. IRWIN, 20TH (D. C. O.) P. I.

For the last two years I have adopted the following "Blank Ammunition Target," and having found it answer so admirably with Recruits and bad shots, I give a plan of the "Target" in hopes the system of instruction carried out may be of benefit to other regiments than my own.

The target consists simply of a plank one foot broad, one to one and a quarter inch thick, and ten to twelve feet long. In this plank, at 30 inches apart, are bored holes of one inch in diameter. These holes are then fitted with a tin cylinder and a wooden plug tin-tipped, inserted from the rear. The front of the board round the hole is protected from the effects of the powder by a tin plate.

This simple target can be suspended from aiming drill tripods for kneeling and lying-down positions, and for standing position can be placed on top of the tripods with sand bag support at back.

The cost of the plank comes to from Rs. 1-8 to Rs. 2-8 according to the station one happens to be in, and this is the only expense necessary to be incurred, as the tin cylinders, plugs, &c., can be made up by the Regimental Armourer from old kerosine oil tins and sodawater corks.

The distance I have found most suitable for firing is four good paces from the target to where the firer stands. In the lying-down position the men must get further back, so as not to bring the muzzle too near the object.

I have found the men always take the greatest interest in firing at this target, and since its adoption in the regiment the number of bad shots has decreased in a most remarkable manner. And many men, who had previously been looked upon as a drag on their Company's figure of merit, have now become first class shots and marksmen.

The target requires to be placed in a barrack room on windy days when firing, and on other occasions as much in the shelter from the wind as possible.

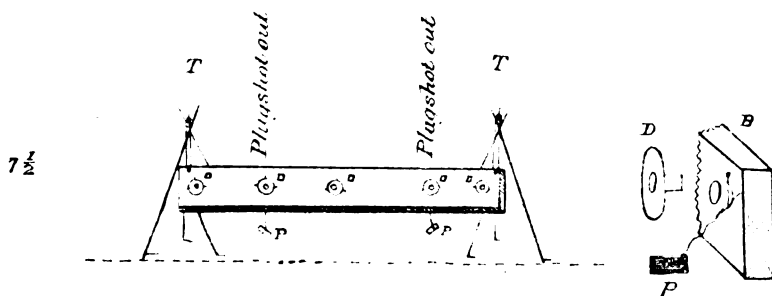
Some officers have told me that they consider the distance fired at, *viz.*, four paces, too near, and also object to no allowance being made for raising the back sight when lying down. The first objection I consider futile. Formerly men fired blank ammunition at a mark on a wall at from 12 to 15 paces distance, and owing to the parade being so uninteresting, they took little or no interest in it, and in most instances fired off their allotted number

of rounds in as short a time as possible, and without taking proper aim in hopes of being dismissed parade the sooner.

At my target I have found men invariably take the greatest pains over their aim, as without getting the eye well down in the notch of the back sight, and then aligning the top of the foresight correctly in the centre of the plug, it is impossible to shoot it out. I may here mention that the plug should fit the hole firmly. To prove that the men take an interest in this blank firing, I have had over and over again to refuse them extra ammunition after they had expended twice the number of rounds that used formerly to be issued.

With regard to the objection as to firing lying down without raising the back sight, I acknowledge that it would be preferable to fire with the sight raised; but to do so one would require to have a graduated scale like that issued with the instructions for using Morris' tubes.

I have on two or three occasions adjusted the scale to 600 yards, but finding that the sighting of the Sniders is not very accurate, I discontinued the making out of the scale; and applied myself more to getting men to press the trigger gently, and keeping the eye well down in the notch of the back sight, and I have had every reason to be satisfied with the result.



T=Tripods.

P=Plug attached by cord to back of board.

D=Tin cylinder and disc round mouth of hole.

B=Portion of board showing plug attached at back by cord.

TRAINING OF ROYAL ENGINEERS IN INDIA FOR WAR SERVICE.

By CAPTAIN JOHN DAY, ROYAL ENGINEERS.

It is beginning to be recognised, both at home and in India, that the peace employment of officers of the Corps of Royal Engineers is not that which would fit them for war.

It is the object of this paper to endeavour to show a system which would, at any rate in India, give a more useful and more military training to the Corps.

The faults of the present system are apparently that nearly all R. E. officers lose touch with their military training and with their especial duties as Military Engineers:—

Faults of present training.

Military training. (a.) Military training may be comprised under the following heads :—

- (i) Drill (including musketry) of Infantry, and of the combined arms.
- (ii.) Strategy and tactics.
- (iii.) Military law and regulations.

(b.) The duties of Military Engineers may be included shortly in the following :—

- (iv.) Field fortification and laying out positions, and the attack and defence of both, demolitions, &c.
- (v.) Military telegraphy and signalling.
- (vi.) Selection of encamping grounds, their water-supply, hutting, and sanitation, &c.
- (vii.) Survey and reconnoitring.
- (viii.) Military road and railway-making, and bridging.
- (ix.) Permanent fortification, both in land and coast, also the attack and defence of these.

A knowledge of all of the above is absolutely necessary to the R. E. officer, and war is so rapid now a days that he should have such a thorough knowledge of each as to have all the details at his finger's ends.

Allowing that the present training is radically defective and liable to lead to disaster, we have to consider how both the necessary ability to command troops in the field and efficiency in Military Engineering may be retained by an R. E. officer who has commenced his education in the schools of Woolwich and Chatham.

Taking (a), military training first, we have as a basis to work upon at present only the three Corps of Sappers and Miners in India.

Considering Bengal alone, there are about 200 R. E. officers in the Presidency, of whom there are two in the Quarter-Master-General's Department, one in the Accountant-General's Department, and about 25 with the Bengal Sappers and Miners.

To keep all these officers in touch with their military training, we will suppose that it is necessary they should spend about one year in four doing military duty.

Allowing for extra staff billets which must be held longer than one year, it will be necessary to employ about 55 officers, therefore, on military duty.

Supposing the Sappers and Miners to be organized into separate Companies as units (see paper on Organization of Sappers and Miners by Lieutenants Selby and Day in the *Journal of the Indian United Service Institution* for 1881)

Sappers and Miners. each as independent as Batteries of Artillery are now, and organized, on the same system we might have eight Companies for service, and one Dépôt or Recruiting Company.

Organization. The Companies to be placed at large military stations, and be employed occasionally on works of utility under the orders of the Superintending Engineer of the Military Works

Employment.

Department. Place them one each at Quetta, Peshawar, Rawalpindi, Umballa, Lucknow, and Calcutta (torpedoes), and two at Rurki, with the Dépôt Company; this would allow of each Company spending one year out of four at Rurki undergoing special instruction.

Stations. Rurki should be the Arsenal and clothing centre for all the Companies. Each Company to be instructed by its own officers, obtaining recruits partially trained from the Dépôt Company.

In the above manner, we provide military employment for (at one Captain and three Lieutenants per Company) 9 Captains and 27 Lieutenants, in addition to one Captain and two Lieutenants supervising the Park and Quarter-Master's duties at Burki. Total, 10 Captains and 29 Lieutenants.

Then we have one Field Officer as A. A. G., and might have two Field Officers and two Captains on the average employed in the Quarter-Master General's Department, (an R.E.'s training renders him especially fitted for the Quarter-Master General's Department and Intelligence Branch).

To give the senior officers of the Corps military employment, the only possible way appears to be to organize two new Pioneer Regiments and officer them with R. E. Officers. This would employ about six Field Officers, four Captains, and four Lieutenants.

Numbers of R.E. officers to be employed on military duty.

The total of R. E. officers then in military employ would be as follows :—

Army Staff.	Pioneers.	S. and M.	TOTAL.	
3	6	...	9	Field Officers.
2	4	10	16	Captains.
...	4	29	33	Lieutenants.

Or 58 officers in all.

This does not include any officers of the Corps who may be in the Brigade or Divisional Staff of the Army as a General Officer.

Taking (b), Military Engineering duties, the remainder of the officers, say 150 in the Bengal Presidency, would be employed in the various branches of the Public Works or in the Military Works Department.

Field fortification, &c., and Military telegraphy.

Nos. IV and V of the duties should be studied during the time spent with the Sappers or Pioneers.

Encamping and hutting.

concert with the officers

No. VI.—Officers in the Military Works Department have usually opportunities of studying these points, and might be also more often employed on such work in concert with the officers of the Quarter-Master-General's Department.

Survey reconnaissance.

No. VII is thoroughly gone into in the Survey Department, and is constantly practised in the various Departments of Public Works.

Military roads and railways.

No. VIII.—Frontier roads and railways are now giving to a great extent employment to officers of the Corps, and are still more likely to do so for the future.

No. IX.—With regard to permanent fortification, beyond the very primitive ideas one forms (and forgets) at Woolwich, one is taught nothing of permanent fortification; and the sooner that a class for this purpose is formed at Chatham and something of the same sort in India, the better, not only for the purpose of instruction, but for the ventilation of new ideas which are sure to be the outcome of such classes.

We are continually altering the old fortifications in India, and occasionally designing new ones ; and in fact there is no command in the Military Works Department at present which has not some fortification works in progress or under design.

A little education in this subject would not be out of place.

It is, to a great extent, an R.E.'s non-fault if he does not take the opportunity of keeping himself *en rapport* with the subject by studying the various text books with authority on this subject, such as Vol. VII of the Corps Papers, Captain Wagner's Principles of Fortification, Sir A. Clarke's Minute on Coast Defence, and the various works of General Brialmont.

Any or all of the Military Engineering duties can be conveniently taught or studied when with the Sappers or Pioneers also.

There would, no doubt, be several difficulties to be overcome in regard to moving officers about so much as would be involved in the above system.

A complete scheme would have to be worked out, and a regular roster kept.

It would be probably necessary in the interests of the sepoys that one of the officers should be retained for two years at a time with the Sapper Companies or Pioneers, and the field officers might be retained for a longer term ; the chief point is to give all R. E. officers a turn at military duties occasionally, and this will be eventually found to be absolutely necessary.

The above is but a rough outline of a scheme which might effect its object ; there are probably other and better schemes known to the authorities.

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SCHEME FOR THE FORMATION OF A NATIVE ARMY RESERVE.

By MAJOR L. B. IRWIN, B. S. C.,

Brigade Major, Mooltan.

DAY by day the want of some system whereby recruiting for the native army may be facilitated becomes more felt. Also the want of what may be termed the "backbone of the army," viz. a Reserve, is more palpable.

In 1884, the United Service Institution of India took this subject for its Prize Essay; and an officer of the Staff Corps gained the gold medal awarded for the best essay. The paper referred to was an excellent one in its way, but there were two serious defects advocated: firstly, drawing Reserves from the armies of Native Chiefs; secondly, from the Police.

With regard to the first defect it would seem more desirable not to interfere with the armies of Native States; and our reasons for saying so are that, if the Chiefs of India are loyal, their armies will be also, and, therefore, would be always available to assist Her Majesty; if they are disloyal they should not be allowed to exist, and in event of their loyalty being doubtful it would be a very questionable matter to obtain men from them, have them trained for, say, eight months to one year, with our own regiments and then sent back as trained "Drill Instructors" for a chief whose loyalty is questionable.

At present there is no army of an Independent Chief which can compare with our own, but with a little aid, such as that advocated in the above-quoted Prize Essay, there are several of the Chiefs of Central India who could soon convert their armies into more than the playthings they are at present, and become a real source of danger to the Government.

Regarding the second defect it is difficult to see how such a proposal as to denude the Police of its finest men in time of danger could ever be entertained. It is just on such occasions as when the Reserves would be called upon that the Police would require its best men; besides

which it is generally admitted amongst officers of the native army that a preliminary Police training is not the most desirable for a sepoy.

Being deprived of the armies of Native Chiefs and our own Police as nurseries for Reserve men we offer the following suggestions :—

Native Army of India Reserves.

At present there is nothing for the native army to fall back upon in event of a protracted campaign, and, therefore, the want of a Reserve has been severely felt during the late campaigns in Afghanistan and Egypt. The latter campaigns fortunately proved but brief ones; it might, however, have been otherwise, in which case the regiments on service would have experienced great difficulty in replenishing their ranks.

The question now is, what would be the best and most economical method of forming a Reserve? The idea at once occurs to utilise men who are now pensioned after 15 years' service in some manner, but to do this there must be a change made in length of service with the Colors. So the following suggestions are made :—

Proposed Reserve. (1) Service* with the Colors 10 years; (2) service in 1st Reserve, 8 years; (3) service in 2nd Reserve, 3 years. This would give a total of 21 years' service. Now at the age at which recruits are enlisted, *viz.*, 18 to 22 (as a rule), there are few men who are not physically fit to serve with the Colors for 10 years, during which time they would have, as at present, a very liberal period of furlough and leave to their homes.

Option to continue service with Colors. On completion of 10 years, men should have the option, if found medically fit, of continuing to serve with the Colors, and being allowed at any time (except during time of war or emergency) thereafter to be transferred on three months' notice to the 1st Reserve if under 18 years' service; if over, to the 2nd Reserve.

Rank in Reserves. Men transferred to either Reserve to retain the rank held by them with the Colors at time of transfer.

In the event of men with the Colors under 14 years' service being found medically unfit by the Annual Medical Boards for further service, either with the Colors or 1st Reserve, they should be granted gratuities as at present.

Gratuities with Colors Men who have served with the Colors and 1st Reserve 16 years, in all, if found by the Annual Medical Boards to be quite unfit for further service or transfer to the 2nd Reserve, to be granted pensions as at present.

Pension. * As a Reserve has been considered absolutely necessary, and orders are about being issued regarding the formation of such *pro tem.* it may not be out of place here to suggest that the conditions of service with the Colors be modified for the next two or three years, *viz.*, service with the Colors 7 years, and men of this length of service be allowed to enter the 1st Reserve. This would bring the 1st Reserve nearly, if not quite, up to strength.

The strength of the Reserves, it is presumed, would be determined year by year and promulgated in General Orders.

Enlistment would be as heretofore for three years only with the Colors; on completion of which men could obtain their discharge under present conditions.

The 2nd Reserve not being so necessary would be more gradually formed.

The term of enlistment now being but for three years, and as an inducement to men to enter the service and remain with the Colors as long as found medically fit, the rates of Good Conduct Pay might be as follows :—

1st rate after 3 years' service.

2nd " " 7 " "

3rd " " 11 " "

4th " " 14 " "

Havildars' and Naicks' pay to be increased Re. 1 per mensem, so as to keep their pay in proportion to the Sepoys'.

Native officers for the Reserves would be obtained from the Colors in the same manner as Non-Commissioned officers and men, but in the event of there being a paucity of officers, specially selected Havildars might be promoted *pro tem* to post of Jemadars during the period the portion of the Reserve to which they belonged was out for training ; receiving pay, &c., as a Jemadar during such time as they performed the duties, and reverting to their substantive rank on completion of training. In an army where the Native Commissioned officers are obtained from the ranks, as a rule, this temporary promotion of Havildars to act as Jemadars will not appear to the Native Army so incongruous as many may suppose.

From the above it will be seen that the ranks of the 1st Reserve would receive a steady replenishment year by year, and that all would be fit for the duty for which required, *viz.*, to furnish some men to the Colors in time of emergency and to supply the place of regiments sent to the front, as a second line of defence.

Men of the 1st Reserve required for service with the Colors in time of war, &c., should be those under 16 years' service. Those between 16 and 18 years' service would perform Garrison, Station and Recruiting duties, &c., and where possible be attached to depôts of regiments at the front.

During time of peace the 1st Reserve men to be called out for training every second year. After entering the Reserve, men obtaining employment in Government Offices and in approved of situations, such as factories, large mercantile houses, &c., &c., might be excused attendance at biennial training, provided that each year they went through a course of musketry target practice with a native regiment or volunteers. This would put employers of Reserve men to little or no inconvenience during time of peace. .

In this manner there would each year be a certain number of men out for training, but never so many that they could not be properly supervised.

Any man absenting himself from training without good cause, to forfeit sixth months' reserve pay, unless he made up his three months' training with either a native regiment or the next lot of Reserve men in training.

Penalties for absence from training. Absence from two consecutive trainings to entail discharge, without pension or gratuity, unless the absence could be satisfactorily accounted for.

SCHEME FOR THE FORMATION

1st Reserve men to have the option of taking their discharge at Option of taking any time after second training, i.e. after 14 years' discharge. service, excepting in time of war, &c.

If found unfit for further service when 14 years' service (or under) to be granted gratuities as at present, or transferred to 2nd Reserve in same manner as men of same amount of service would be transferred from the Colors. Men of 15 years' service found medically unfit for further service, or transferred to 2nd Reserve, to be allowed to remain on for one year more and then be pensioned.

Discipline. When out for training, 1st Reserve to be under military discipline and subject to promotion, reduction, dismissal, &c., &c.

Free Kit. When called out for training each man at first and third training should receive the following free kit :—

- 1 Khaki Drill Blouse.
- 1 " " Knickerbockers.
- 1 " " Puggree.

Kit allowance. At second and fourth training a kit allowance of Rs. 2-12 per man to be granted to replenish the free kit.

Pay. When in training, pay and good conduct pay to be on same scale as for Regulars ; and when not out for training, pay to be granted as follows :—

Subadar-Majors ...	Rs. 100	Or if these rates are thought too high	Rs. 80	0	0
Subadars ...	" 60		" 40	0	0
Jemadars ...	" 30		" 25	0	0
Havildars ...	" 10		" 9	0	0
Naicks ...	" 8		" 7	8	0
Sepoys, Buglers, Drummers ...	" 6		" 5	0	0

In addition to above allowances for order of merit and British India would be granted.

No man (except native officers) to be allowed to remain in the 1st Reserve after completing a total of 18 years' service, except under very special circumstances to be sanctioned by H. E. the Commander-in-Chief.

1st Reserve would be liable to be called out for service in event of war, or any great emergency, and when so called out be liable to serve ; those men between 16 and 18 years' service, anywhere within Indian limits : those men under 16 years' service anywhere within Indian limits, or if required, with regiments at the front, beyond Indian limits.

Men of 1st Reserve joining regiments for service should be granted kit allowance of Rs. 30, minus cost of free kit, or kit allowance of Rs. 2-12 if received within the year. Similarly Reserve men remaining for garrison duty, &c., &c., should receive a kit allowance of Rs. 15, without deductions. If the Reserve men were dismissed within a year the surplus

kit to be sold, and amount realized credited to Government with any cash balance.

Half mounting. Reserve men serving over one year in time of war, &c., to be granted the usual half mounting allowance given to men of Regulars.

Public establishments. During time of training, bhisties, cooks, sweepers, and bunniahs should be arranged for by the Officers Commanding Reserve Battalions, and paid for by Government as per Regular troops' scale. When called out in time of war, &c., Reserves should be placed on exactly the same footing regarding establishments as Regulars, and if quarters are not available, tents

Accommodation during training. should be supplied to Reserve Battalion Commanders, on indent by Native Infantry regiments, or Ordnance Department.

Arms and accoutrements. Arms and accoutrements for both Regular troops and Reserves should all be of one universal pattern, and when a man is transferred to the Reserve he should take his arms and accoutrements to the nearest "Reserve Storeroom" and hand them in, receiving a receipt for them. In this manner there would be little difficulty experienced by the Reserve Battalion Commander in arming and equipping his men; a man on being transferred to the Reserve should be called upon to say at what station he intended putting in his training, the intimation of the man's intention, signed and sealed by himself, being forwarded to the Reserve Battalion Commander, who thereupon could make arrangements, previous to training season, for the necessary supply, if deficient in numbers. In this manner a supply of new rifles would be continually coming into a regiment, and men would not have, as at present, often to go on service with a weapon very little better than a smooth bore.

Reserve men should, as far as possible, be associated with their former corps when ordered on service, and others stationed as near their homes as may be from time to time considered desirable.

When called out for service during time of war, or in great emergency, free passes by rail should be granted to the station to which ordered. Passages by rail emergency, free passes by rail should be granted to the station to which ordered. And when the war or emergency ceases, passes to their homes should also be granted to Reserve men. Also when Reserve men are at any time pensioned or discharged, on recommendation of Medical Boards, free passages to their homes by rail should be granted.

A 2nd Reserve may by many be considered an anomaly when it comes to be composed of veterans, but considering the early age at which natives enlist, viz., 18 to 21 years, few can be considered "old men" on attaining the age of 36 and 39 years respectively.

Year after year sees fine, hale, seasoned soldiers sent to the Pension List after 15 years' service, for no other reason than that they have completed 15 years, and considering themselves entitled to pension after that number

Present system of pensioning creates maligners.

of years' service often feign disease, mental incapacity, &c., &c. No regiment in the service is without cases of this sort, and although European, Native and Non-Commissioned officers and men know of the deception in many cases, still no check can be put on the practice. Now, if a regular system of time for obtaining pension were instituted, the present system of malingering would undoubtedly cease. The 2nd Reserve would consist of (1) men who have completed 18 years' service with Colors, or 1st Reserve combined; (2) men who may have been sent to the 2nd Reserve from 1st Reserve by Medical Boards.

These men would in reality be pensioners, receiving pay as such, but be liable to be called out for Garrison and Station duties, &c., in time of war or great emergency, up to such time as they should complete 21 years service (with Colors, 1st Reserve and 2nd Reserve), unless they had previously been declared unfit for any further service by Medical Boards, in which case they would be placed on the Pension List.

The 2nd Reserve when called out would be liable to serve anywhere within its own Province, and if found necessary, the service of men of this Reserve to be retained, by order of H. E. the Governor-General in Council, for a further term of six months beyond completion of 21 years.

When called out, as above stated, the 2nd Reserve to be under military discipline and be subject to promotion and reduction during the period it may be embodied only. On dismissal, men would revert to their original grades and pension, unless permitted in special cases to retain the superior rank they held when embodied, and enjoy the pension attached thereto, by order of H. E. the Governor-General in Council. Men reduced for misconduct, &c., while embodied would revert to original grade and pension on dismissal of Reserve. No man should be discharged the service from the 2nd Reserve unless for the gravest offences.

Any man of the 2nd Reserve not appearing at the place ordered to forfeit all claim to pension for remainder of such term as would have brought his service, with Colors, 1st and 2nd Reserve, up to 21 years; and if a native officer to have his pension thereafter reduced by one-fourth; if a Non-Commissioned officer, pension to be reduced to that of sepoy; if a sepoy, pension to be reduced one rupee a month (unless the absence could be satisfactorily accounted for).

When embodied, 2nd Reserve would receive full pay and allowance, and be placed in every respect on same footing as the 1st Reserve, with regard to kit allowance, quarters, establishments, free passages, &c. 2nd Reserve would be attached to the 1st Reserve and be under the Reserve Battalion Commander.

Arms and accoutrements for the 2nd Reserve would be obtained from nearest arsenals. As by the system of 1st Reserve men bringing their arms and accoutrements

with them from the Colors an ever increasing supply would be brought to the "Reserve Store-rooms," consequently surplus arms and accoutrements, *i.e.* those belonging to men transferred from 1st Reserve, would be returned to the Ordnance Department, as there would be no necessity, on ordinary occasions, to retain them for the use of 2nd Reserve.

These Store-rooms should be erected in every station which was the Head-Quarters of the Reserve Battalion, and be under the charge of the Battalion Commander, who should be allowed a sufficient number of storemen to keep the arms and accoutrements in order when not in use.

No ammunition need be retained during the year for use of Reserves when in training. Half the annual allowance granted to Regulars for target practice should be granted to Reserve men and indented for by Battalion Commanders previous to training season, and placed in nearest magazine.

Under the heading of Reserve Staff would come the following :—

Reserve Staff. 1 Battalion Commander ;
1 2nd-in-Command and Wing Commander.

1 Adjutant and Quartermaster.

Under the seven years' command system now in vogue there would seldom, or ever, be any difficulty in finding experienced officers to hold the post of Reserve Battalion Commanders, or, indeed, that of 2nd-in-Command and Wing Commander, if a slight increase was made to the staff pay of latter, as these officers would invariably have permanent stations, and, therefore, avoid the expense of continual moves if with a Regular corps. The command should be held for three years only, or certainly not longer than four years.

The Adjutant would be found from Staff Corps Captains, and should be placed as regards Staff pay on same footing as Adjutants of Volunteers. The appointment should be a three-year-one, and officers holding it be seconded in their regiments.

During training season Reserve Battalion officers would be struck off all station duties ; at other times they would take their tour of duty.

All papers and documents concerning 1st Reserve should be in the hands of the Battalion Commander, and pay (Reserve arrear pay) issued by him yearly, after training season was over, to all those men present at the training, and to as many others of the previous year's training as wished to come for it.

In addition to above the 2nd Reserve, when called out, would also be paid by him for the period during which embodied ; a last pay certificate of each man being forwarded to the Circle Paymaster on dismissal of the Reserve.

A nominal list of all 2nd Reserve men in his command should be kept in the office, and all reports, &c., of men absent, discharged, &c., sent to the Paymaster with last pay certificate.

To enable the Adjutant to keep up this office efficiently with writers, stationery and office rent, a monthly allowance of the 1st Office allowance. Rs. 100 might be granted.

Reserve by the Adjutant would in a great measure reduce the work, and, therefore, expense of the Circle Paymaster's office.

The formation of a Reserve will naturally increase expenditure on the army, but at the same time there is no doubt but that the army will be equally increased in efficiency. As the increased expenditure may be more than the finances of the country can bear, it is suggested to reduce the strength of regiments by (120) one hundred and twenty sepoy. If the native army is again brought up to its full number of Regiments, the number of sepoy in each Regiment to be 600 only, the present strength of a regiment being—

16 Native Officers.	40 Havildars.
16 Buglers.	40 Naicks.

720 Sepoy.

This apparent loss to strength of regiments it is hoped would be more than made up for in time of need by the system of Reserves, as above set out; and with a better system of recruiting ordered on service would do so with ranks augmented to the full, or war strength of 800 sepoy, and that the supply to replenish casualties would be forthcoming with the extra inducements offered to serve.

The increase of pay offered by good conduct pay would induce men to enlist who now hold back, owing to the high wages given on railways and other public works. Few men once enlisted under terms now mentioned would care to take their discharge, owing to the easy terms on which they could enter the 1st Reserve. The conditions of service in the 2nd Reserve are merely nominal, as the men are to all intents and purposes pensioners, and would never be called upon for service, excepting under circumstances of the greatest emergency.

The system at present existing of allowing men who have taken their discharge from one regiment and enlisting in another to reckon their former service after 3 years in their new regiments, is an encouragement to men to take their discharge from a regiment in which they consider they are not likely to obtain promotion, and should be stopped. If the suggestions above given are accepted, and more facility given to men to be transferred from one regiment to another, in event of their not caring to serve the whole term in the regiment in which originally enlisted, this would cease.

The 2nd-in-Command and Wing Commander may occasionally be superfluous—say in event of there being under 500 Reserve 2nd-in-Command. (1st Reserve) men in any Battalion Command. This, however, would seldom, if ever, happen. If it did, this officer could be relegated to general duty, provided no other appointment was available with the Colors or Reserves. Medical attendance for Reserves would be obtained from native regiments and depôts; medical officers being granted a small increase of Staff pay and given an increase in establishment according as necessity would arise.

Pay Havildars, Armourers, &c., would invariably be found amongst the Reserve men.

The suggestions offered have been made with reference to Native Infantry, but no doubt with some few alterations they could be made applicable to Native Cavalry also.

The military mind of the present day is much exercised to devise some arrangement by which employment for old and worthy soldiers may be obtained. Let it therefore be made known that all employers of labor have a ready means of obtaining reliable men in the 1st and 2nd Reserves by merely applying to the nearest Reserve Battalion Commander, and an additional incentive to enter the ranks of the native army is at once created and recruiting facilitated in proportion.

HINTS ON UMPIRING AT FIELD MANŒUVRES.

BY MAJOR E. C. BROWNE, *Royal Scots Fusiliers.*

"AN Umpire should clearly understand what his duty consists in. This would appear to be simple enough, but it is by no means so.

"Rapid decision, the power of being able to take in at a glance the whole situation, and a thorough knowledge of the relative effect of the three arms in battle, are indispensable qualifications in an Umpire."—*Von Boguslawski.*

My object in writing this pamphlet is to supplement the instructions for Umpires which are published by authority at our Head Quarter Offices. In these a few rules are laid down for guidance, but no attempt is made to treat the subject as a distinct branch of the military art. I am of opinion that it is so ; and that men who have not previously thought or read on the subject will not be likely to arrive at correct decisions at critical moments during an action. Hitherto I have been discouraged from attempting to write anything on the subject as I could not see my way clearly, but the appearance of Von Boguslawski's book on Field Manœuvres has thrown a flood of light on the art of Umpiring ; indeed, this pamphlet is little more than an embodiment of his views. Lieutenant Bodé, Middlesex Regiment, has been my stand-by as translator, and in preparing the examples from field days at Secunderabad, I have acted in concert with several senior officers at this station.—E. C. B.

INTRODUCTION.*

Ever since German armies, carefully trained in barracks and camps and accustomed to manœuvre in large bodies over extensive tracts of country, proved their superiority in war to the best troops that Austria and France could bring against them, it has been accepted as a principle by all the great European powers that yearly manœuvres on a large scale for the troops are desirable, if not necessary additions, to their ordinary training. Now it is obvious that to make these mimic battles of any practical use they must be carried through in a manner as like the real thing as possible.

With a view to attaining this highly desirable end Umpires are appointed to give decisions on the various situations.

The battle is raging under their eyes, but there are no bullets and no cold steel : it is all smoke and noise. Their duty is to note the surrounding circumstances and decide what would happen if the whole thing was real. But what is to guide them to a correct decision, seeing, as is the case with us at present, that our officers have had no experience of big fights since the Crimea ? Well it is clearly this : the

* This paper was prepared when the author was stationed at Secunderabad.

general principles of modern war as deduced from the latest European campaigns—anything else is likely to be misleading.

All the moral influences, which according to Napoleon are to the physical as 3 to 1, can scarcely be taken into account without much vague speculation. The courage and determination of a body of troops, which may be the result of national pride, previous successes, enthusiasm for a cause or belief in some much-loved leader, are factors which may not be employed in order to solve correctly the problem.

The Umpire must stick to hard, dry facts, such as the numbers on each side, the advantage of position, the relative destructive power of the various arms of the service as illustrated in such modern fights as Sadowa, Richmond, Gravelotte and Plevna.

After all, these can be the only true guides. Courage and good leadership are all powerful elements of success in war, but they will seldom compensate for any very great disparity in numbers, and this is now more the case than ever.

Without reserves well held in hand and ready to support any portion of a line of battle which has had to withstand the brunt of the enemy's attack, no position will be tenable for long, and no attack, however dashing, is likely to succeed.

From some of the decisions given at our manœuvres, it would appear that few Umpires understand the true fire effect of Artillery and Infantry. According to the statistics of the late big fights in Europe and America it takes an astonishing number of rounds of Artillery ammunition to render one man *hors de combat*. Before the Franco-Prussian war the French Artillery were supposed to be almost perfection, but it is surprising to find the few Germans it was able to account for after many hours' heavy cannonading. It becomes necessary, therefore, for Umpires to carefully consider their decisions when they are called upon to allot the casualties among Infantry, especially moving Infantry, from the fire of guns in position.

It is when a well-served Artillery is allowed to occupy a position on the flank of a defensive line of battle that its effect is all-powerful, and probably decisive of the action.

[Military writers are now more than ever at variance as to the self-defensive power of Artillery. Can a Battery hurl back an attack of Cavalry by discharges of case shot at close quarters? There are some gunners who hold that the thing is possible provided their flanks are secure, but it is not the experience of modern war. We may safely conclude that a Battery which is charged by Cavalry and is unsupported by an adequate escort of that arm is lost. There are numerous cases of our gunners holding their ground under a sustained fire of Infantry, but it is a hopeless task, and generally ends in the loss of the Battery, which is unable to move in the last moment for want of horses.]* Umpires

* Major A. D. Anderson, R.H.A., proposes to substitute for the words in brackets, the following :—

"Opinions differ somewhat regarding the self-defensive power of Artillery, but the experience of modern war has proved to us that Artillery with ground in their favor with their flanks secure need fear no frontal attack.

have constantly to decide questions of Cavalry charges against Infantry skirmishers. In all these cases the Infantry would form groups, and the Cavalry would gallop through the intervals without doing much harm. On the other hand the Infantry fire would be wild in the extreme and no great number of saddles would be emptied. This is, of course, taking it for granted that the charge was judiciously led, and the troopers not exposed for any distance during their advance. The case of the charge of the French Regiment of Cuirasseurs at Wöerth which resulted in the destruction of the horsemen would always be exceptional in war. It was recklessly led, the ground was rocky and the object of the charge was not obvious to the men.

With regard to the question of moral effect the distinguished writer whose views I am about to make known to my readers is of opinion that this ought to be taken into account by Umpires in coming to a decision on a situation. As it is assumed, however, in all our manœuvres that both sides start equal as regards *morale*, it would be no easy matter to decide how much one side had lost and another had gained by a certain turn of affairs during an action.

I propose with these few introductory remarks to give Von Boguslawski's views on the subject of Umpiring at Field Manœuvres. His opinions on the duties of the Umpire-in-Chief are given at some length, but as our army is not constituted exactly like the German, I have somewhat epitomised them. His remarks on the work of the Umpires are so good that I have given them as literally as possible.

DUTIES OF THE UMPIRE-IN-CHIEF.

Considerable space is devoted by Von Boguslawski to the manner and bearing of the Umpire-in-Chief towards his superiors—probably the Emperor and the Royal Princes, who generally attend German manœuvres—and his inferiors, a great part of which is inapplicable to the British army.

"The time that the movements are to begin," he says, "must be fixed by the Umpire-in-Chief. On the other hand the movements within the line of outposts must be left perfectly free, be they to the front, flanks or rear—whether performed by the advanced guard only, or by the main body of the division, for the Umpire-in-Chief is already aware of any proposed concentration of troops by the programme of movements sent to him by the Commanders."

The author next goes on to state that the Umpire-in-Chief can either take up commanding positions from which he can observe the movements

"Boguslawski gives it as his opinion that 'unless manned by arrant cowards, a Battery, with both flanks protected by Infantry, coming under the fire of Infantry advancing against it, would hold its ground as long as there was a single gunner left to work the guns,'—while there is no instance on record since Balaclava where guns protected in flank have been ridden through from the front by Cavalry in any formation.

"Modern Artillery writers urge the boldest use of guns, their being pushed forward to short ranges in support of the other arms when opportunities exist, and their retention in the foremost fighting line even at the cost of sacrificing them, if the necessities of the occasion demands it.

"Umpires have constantly, &c., &c."

of both sides, or he can attach himself for a time to one side or another. In the latter case he is recommended to send a Staff Officer to the other side to keep him informed of times, numbers and current events.

He is enjoined not to attempt to instruct Commanders while the exercises are in progress. He is recommended on no account to interfere with the course of the action by sounding the "halt," although this may sometimes be necessary to unravel "unnatural entanglements," but the author is of opinion that it would be far wiser for the Umpire-in-Chief to allow matters to right themselves, and merely to give his tactical decision.

"Attempts on the part of the Umpire-in-Chief to correct awkwardness on the part of the troops, however justifiable, may produce evil consequences.

"First of all, this may bring undue pressure upon certain points in the line of battle which might upset a Commander's plans; while on the other hand by directing his attention to such trivial points he may lose his grasp on the situation.

"I do not mean by this that the Umpire-in-Chief should pay no attention to the manner in which the operations are carried forward; quite the contrary. His continual close observation ought to enable him to form an opinion on the capabilities of the Commanders during the course of the action and the general bearing of the troops."

To do this effectively, the author goes on to point out it is desirable that the Umpire-in-Chief should be a man of great physical as well as mental activity. That he should be a "bold and rapid rider," and well mounted. He is recommended to take notes of the events passing under his eye, and to record the answers given by the Commanders to his enquiries. He is to arrange to be near a Commander at any critical moment, such as when it becomes necessary for him to change his plans with a view to ascertaining his ability; but he is cautioned against remaining too long lest his presence should cause restraint and doubt on the part of that officer, and cramp his action. At the same time the Umpire-in-Chief is enjoined to ascertain at once from a Commander his reasons for making any great change in his plans.

"But he must hesitate to alter them without some very good reason for so doing. He must ask himself the following questions:—

"Is this Commander acting in accordance with the rules of modern war?

"Judging by what he knows, hears, and sees of the enemy, is he acting with reasonable judgment and skill?

"Is this change expedient, or is there obviously any other more feasible plan for meeting the difficulty?

"The Umpire-in-Chief must at once picture to himself the aspect of the manœuvres as changed by these new orders, and must consider the probable course the action will take in consequence. He must deduce the necessary consequences, and furthermore consider and determine the question as to whether it would be expedient or not to turn the manœuvre into the right direction by means of a new supposition, or a fictitious report."

He concludes with the following remarks : " He should observe, rather than express an opinion ; he should question rather than answer : in general be silent rather than speak."

ON THE DECISION AND CRITICISM OF THE UMPIRE-IN-CHIEF.

" On the 'general halt' sounding, the troops should be allowed to fall out and take refreshment. The senior officers should then be directed to assemble at a point from whence, if possible, a good view can be obtained of the whole neighbourhood. Before the Umpire-in-Chief begins his criticism, the Commanders on both sides must read out their instructions, their plans for carrying them out and any additional 'ideas' which they may have received during the manœuvres. All discussions should be conducted in a loud and distinct tone of voice.

Nothing is more depressing or more calculated to cause interest to flag than to have to sit on horseback in intense heat or rain, listening to a discourse of which little is audible. The criticism is for the benefit and instruction of all the assembled officers, and should be heard distinctly.

It must embody the views of the Umpire-in-Chief on the manner in which both sides were led, and on the behaviour of the troops in carrying out their orders.

He should be able to give reasons for the opinions he expresses. If he is in doubt he should question the Umpires and Commanders then and there, to prevent the possibility of misconceptions. For instance, a Commander may have acted wrongly as things turned out, and yet quite correctly, going as he had to do by the reports which he had received at the time. Although it is impossible to lay down any distinct rules on the manner an action should be criticised, it might be advisable to adopt one or other of the following methods :

To briefly narrate the day's proceedings and to criticise the various incidents as they occurred.

To first give a short account of what has been done, and afterwards to criticise points of importance.

This latter, however, is a tedious method, and requires a very good memory.

The address of the Umpire-in-Chief should be divided into three portions, *viz.*, the summary of the operations ; the criticism on the most important points ; and the decision which should be *clear and unmistakable*.

He must take care that his remarks are not a lecture on strategy or tactics. He has only to criticise certain operations, not to enunciate general principles. He must take a certain amount of military knowledge for granted. If he finds, which is unfortunately frequently the case, that there are some amongst his audience who are ignorant of commonly accepted principles, it is not his business to instruct them.

He may quote the opinions of known authorities, or give general principles if they are particularly applicable to any special case. It is highly desirable that the criticism should be short and to the point.

He should dwell particularly on the way in which the troops were handled and led, not so much on their behaviour, as this latter subject

may subsequently be made the subject of a separate communication. Strategical points should not be ignored any more than tactical. The Umpire-in-Chief must decide if the line of advance was advantageous or the reverse : if the strength of the position was rightly estimated, and if the troops were properly handled in each phase of the attack.

The following points should be considered in connection with the defence :

Was the defence purely passive or active ?

Was the Commander, after careful consideration, justified in adopting the means he eventually did ?

If a Commander, under exceptional circumstance, uses any of his troops in a manner which is generally looked upon as inapplicable to their functions, this should be commented on, and his reasons discussed.

The Umpire-in-Chief generally attaches too much importance to the nature of the ground. We are all liable to attach too much weight to the physical features, and to forget that the object of a commander is to act as he would do in real war, and to destroy the enemy at any cost. If it should become necessary for a Commander in order to accomplish his aim, to occupy a position out of the assigned limits of the manœuvring ground, he must be allowed to do it.* Having given his decision the Umpire-in-Chief should ask those present if they have anything to say on the subject, and should any one object to the decision and give good reasons for doing so, the matter should be calmly discussed and the original decision, if necessary, altered.

Only small minds fear discussion. This fresh decision must, however, be final, and no further discussion allowed.

In pointing out mistakes the failures of senior officers should be dwelt upon as little as possible, and no personal remarks made ; but the Umpire-in-Chief should express himself so as to *leave no doubt whatever as to where the mistakes lay.*

The Umpire-in-Chief should personally inspect the line of outposts, but should he find the arrangements faulty he should not attempt to correct them at the time, but point them out afterwards.

Should, however, he judge it advisable, he could direct an attack to be made in order to illustrate the faultiness of the dispositions.

THE UMPIRES.

This portion of the subject, which is all-important to the effective carrying through of all manœuvres, is treated by the German tactician under the following heads :—

Umpires and their position—Decisions to be based on purely technical considerations—Points of importance, numbers, effect of arms, &c.—Bearing and formation of the troops—Influences of particular circumstances—Influence of ground, &c.

"It is expedient," he observes, "that the Umpire-in-Chief should, whenever practicable, give the decision himself on any important point,

* Few will concur in this opinion. With us, boundaries are necessary to avoid destruction to property.

but as a matter of fact by far the greater number of decisions are given by his assistants, to whom let us now turn our attention.

Everything that has been said about the bearing of the Umpire-in-Chief applies equally to the Umpires.

To begin with, an Umpire should clearly understand what his duty consists in. This appears simple enough, but it is not always so.

He has to give decision on tactical situations at the moment of collision. To do this successfully he must possess considerable tactical knowledge, and must act with coolness and decision. He must not be influenced by personal motives or by feelings of good-fellowship; to show no preference for any particular branch of the service, or for any special method of attack or defence.

He must give his decision after calm consideration, and with as little delay as possible.

He must on no account make any remarks on the conduct of a manœuvre, or proffer any advice to a Commander, as such a proceeding would have the effect of depriving the work of any show of reality.

Any decision based on other than sound tactical ground should be guarded against.

It has frequently happened that the most improbable and unnatural decisions have been arrived at, giving rise to the impression that it has been the desire of the Umpire-in-Chief that the action should take such and such a course. The result is that false ideas are disseminated, of the effect produced by the different branches of the service, and the spirit of the troops broken, which is fatal to the successful carrying forward of the day's work. The men themselves know perfectly well when they feel strong enough to defend a position, and are disgusted beyond measure if ordered to retire without any reason. In making a tactical decision the whole state of the action must be carefully considered.

He must carefully consider the following points :—

- (1.) The number of troops employed in action on both sides.
- (2.) The moral effect that would probably be produced in war by the surrounding circumstances at this particular point.
- (3.) The general formation of the troops on each side.
- (4.) On the probable effect that would be produced by each branch of the service on the spot.
- (5.) On the effect the nature of the country would have on the course of the action at this particular place.

But it is evident that, although the Umpire must consider all these points before giving his decision on the situation, he must not be afraid, if he thinks right, to attach special importance to one or another of them.

To take numbers alone into consideration, as is very often done, would be the greatest error imaginable. Not alone is this unnatural, but is quite contrary to the rules of war, and calculated to cause discontent amongst the troops.

In the defence in particular, a numerically inferior force can repulse the attack of a body, two or three times its strength.

Lundby, Lanfach, Taubertischofshein, Baume la Roland, the wall of the park of Buzanval, near Paris, on the 19th of January 1871, the battle of the Lisaine, and hundreds of other instances occur in the history of modern warfare. But even now-a-days it is impossible, by taking advantage of cover, by an unexpected attack, by skilful selection of an Artillery position, or by determined courage, to attack successfully with equal or even inferior forces.

I must confess that this point possesses considerable difficulties, as the *morale* of both sides must be considered equal in peace manœuvres.

It does not follow from this that at certain times the discouragement of the troops brought about by sudden losses, the unexpected appearance of the enemy, and courageous and determined handling should be altogether ignored; on the contrary I consider that to weigh these influences properly, and attach to them their right value, is one of the most important duties of an Umpire. He ought to be capable of forming an idea of the situation as it actually would be in war, and to do this, any indication of a state of things which would be likely to affect the *morale* of the troops must be taken into consideration. This is very justly pointed out in Chapter VIII of our Regulations, where it lays down that the wild and hurried fire of Infantry would be an important guide in forming a decision. Furthermore, I would add that indecision by the leaders of troops at the moment when the action takes an unexpected and critical turn, is a matter which exercises the greatest weight.

This will appear most frequently in the attack, or in a sudden encounter of a like nature.

If, for instance, troops having arrived within a short distance of the enemy's position, and, instead of pouring in a heavy fire and charging with the bayonet, should hesitate, it is plain that this is due to the indecision of their Commanding Officer, and the Umpire will scarcely be able to pronounce them victorious when they advance finally to the attack.

Indeed, it might be wise in certain extreme cases, to order them to retire before the final attack.

A body of troops, which, when it meets another body unexpectedly at a bend in a valley, fires a volley, and at once cheers and charge with the bayonet, while the other party merely fires a few hurried and unaimed shots, must be considered victorious, even although the opposing force be considerably superior in numbers. It must not be considered, however, that numbers alone are to be looked upon as the decisive factor in coming to a conclusion. As has been previously remarked the Umpire must consider what would be the moral effect on one side or another at a certain crisis.

This point has hardly been sufficiently considered in our manœuvres and in the regulations thereon.*

The formation in which troops advance to the attack and prepare to defend a position must always be an important guide for an Umpire.

* The fact is, it is quite impossible to take *morale* into consideration during manœuvres. Any attempt to do so would be attended with failure.

It is true that a Battalion no longer advances to the attack over open ground in close column ; but close formations, even Company columns, are still often employed in such a way as to equal in absurdity Battalion columns.

During one of the recent big German manœuvres an officer of high rank asked a Battalion Commander who was advancing to attack a wood with his Battalion in Company columns, at 25 paces intervals, why he had selected a formation which must necessarily entail heavy losses, and did not allow of sufficient development of first. The Battalion Commander referred him to the Standing Orders of his Corps, issued by higher authority. The attack was pronounced unsuccessful by the Umpire on the spot, which goes to prove that our peace manœuvres are the only means of testing our rules and regulations.

We have now discussed points 1, 2 and 3 : we propose next to turn our attention to the important subject of armament.

It may be taken for granted that an Umpire thoroughly understands the effect of fire, both Artillery and Infantry, but a wrong decision may arise from other causes than any want of knowledge of fire effect.

An Umpire must never forget that he is mounted, and that from his position many things may appear quite different to what they do to men on foot.

An Umpire, for instance, who is so placed as to overlook both parties, may think that an attacking force was exposed to the defenders' fire during the whole of their advance, whereas a slight wave in the ground rendered it impossible for the defenders to bring their fire to bear on the attacking force for some all-important moments. An Umpire must always be mindful of this, and move about continually, so as to see the ground from different points of view.

An Umpire must never act mechanically. For instance, it would be quite wrong to order a Battery protected on both flanks by Infantry, to retire, because it happens to come under fire of Infantry advancing against it. In actual warfare the Battery, unless manned by arrant cowards, would hold its ground as long as there was a single gunner left to work the guns. If the Umpire orders it to retreat his decision is based on an empty form, not on practical experience. He must not think of the theoretical conclusion that a Battery cannot long remain exposed to Infantry fire, but he should ask himself this question : "Ought this Battery in real war to hold its ground or not, in spite of heavy losses, seeing, as is the case, its flanks are protected by Infantry?" If his answer is in the affirmative he must next consider what effect the fire of the Battery and of the covering Infantry will have before deciding on the situation.

Should he decide that the defence, after a prolonged resistance, had broken down, he would be perfectly justified in declaring the Battery captured, as the probability would be that in real war there would be no horses left alive to drag away the guns.

The Umpire must on no account allow the effect of fire to be overlooked. This ignoring of fire effect is quite different from the case

above quoted, in which the Commander, fully alive to the effect of the enemy's fire, orders his Battery to await the hostile Infantry to the last, at the risk of losing his guns to effect a certain purpose, *i.e.*, to maintain his position.

A squadron that, to save a line of Infantry from the pursuit of a victorious foe, throws itself upon them, and which is ordered by the Umpire to leave the field because in his opinion more than half of them would have been shot down, may yet have acted wisely, and with perfect consciousness of the result. A squadron which, on the other hand, dashes across the front of a line of Infantry, and then wheeling round attempts to attack its flank, fully proves that the Commander is ignorant of the effect of Infantry fire. An Umpire must not alone send the squadron back, but report the circumstances to the Umpire-in-Chief.

Such disregard for the effect of fire, and such other cases as Cavalry halting within a few hundred yards of the enemy's officers' patrols, riding through the enemy's line of skirmishers, and approaching his flank, are bad habits acquired at manœuvres, and have latterly not been sufficiently checked when trials have been made of the capabilities of Cavalry.

Umpires must use their most earnest endeavours to put a stop to this state of things. During the last ten years we have frequently heard it remarked that we must not do anything calculated to destroy the dash of our Cavalry, and that therefore an occasional unnatural mode of action should be overlooked.

This is a false mode of argument, and we most certainly shall destroy the dash of our Cavalry if we teach them to do things in peace that it would not be possible to effect in war.

The following rules may be laid down as a guide to the settlement of these questions :—

“An attack by Cavalry on unbroken Infantry may generally be considered as repulsed.

“An attack by Cavalry on broken Infantry, especially if the latter are exposed to hostile fire as well, may frequently be attended with success.

“A sudden Cavalry attack on the flank of attacking Infantry exposed to a heavy fire from the defenders, may be on some occasions considered successful, because the Infantry in this case will have to face in two directions, and close their formation, thus offering a better target for the enemy's fire.

“As regards attacks of Cavalry against Cavalry, the German Regulations lay down the following rules for guidance, on field days :—

“Cavalry ordered to retire by an Umpire are to do so at a trot, on a line perpendicular to that by which they had advanced.

“The victorious side must follow at a walk for at least 100 yards, with its front extended as it was at the moment of collision, before it can halt to reform, but it may pursue at the same pace as the defeated body, in the same loose order, and in the same direction, as long as it likes, even although it drives the opposing force beyond the limits of the action.

"It may not attack again, however, nor can the defeated force stop to rally.

"The Umpire must on no account allow the pursuit to exceed the bounds of common sense. He must save the troops from undue fatigue, although the movement must not be checked until the result is clearly apparent.

"Should the Umpire perceive that the defeated Cavalry have no fresh troops to fall back on, or if their retreat be intercepted by some obstacle, the pursuer may again attack. In this case the defeated Cavalry should be put out of action."

These rules are excellent: they show a desire to conduct Cavalry combats in the same manner as they would be in the time of war.

We should like to know, however, how often they are carried out; as far as my experience goes, the defeated body certainly retires, but the pursuit, as ordered by regulation, is apparently never dreamt of.

The rules about the advance of a second line and its effect are a good attempt to present a true picture of the fluctuating nature of a Cavalry action.

On the other hand, but too little attention is paid to a very likely event, *viz.*, that troops belonging to other branches of the service might join in the struggle.

This is very likely to happen, especially at small manœuvres, where large bodies of Cavalry are not at hand.

In certain cases, though not very often, our Regulations enter too much into particulars, as when they speak of driving defeated Cavalry against an obstacle.

Rapid decision, power of grasping the whole situation, and a thorough knowledge of the characteristics of a Cavalry action are very essential qualifications in an Umpire.

A Cavalry attack against Artillery is more likely to be successful than an attack against Infantry. But Artillery is rarely unprotected, and when taken, it is difficult to guard it against counter-attack. This knowledge an Umpire should also possess if he is desirous of giving correct decisions. It is difficult to form an opinion as to the effect of Artillery fire, but Umpires must take great pains by watching the fire, to arrive at correct conclusions, and to throw a proper light on the action of that important arm.

There are old-fashioned views on Umpiring which are perpetually cropping up: for instance the notion that an attack that has been once repulsed should succeed a second time. This means that the attacking force retires, halts, fronts, advances again, and carries the position. The decision ought to be quite the reverse of this. Should the attacking force be compelled to retire after an unsuccessful attack, under the heavy fire of the defenders, it would never be able to make a fresh attack.

If an attack is repulsed, it is highly improbable that the same troops could be brought to attack again, unless considerably reinforced—frequently not even then.

No number of reinforcements could have induced the 38th Brigade to advance again after their repulse at the battle of Mars-la-Tours for

the simple reason that they were completely exhausted, both morally and physically.

It sometimes occurs in war that a body of troops is rendered quite useless or is totally destroyed.

But in manœuvres only the following contingencies can be considered:—

- (1.) The troops may be considered to have suffered such heavy losses as to render them on that account, as well as from the resulting loss of *morale*, unable to take any further part in the action.
- (2.) They may have been thrown into confusion by a sudden and unexpected attack.
- (3.) They may have been surrounded and taken prisoners.

Should the Umpire be of opinion that any of these contingencies could have taken place in actual warfare, these troops should not be allowed to take any further part in the manœuvres for that day.

The Umpire-in-Chief must be immediately informed of this.

Placing troops out of action has this disadvantage, that they are unable to derive any further instruction from the manœuvres.

Our Regulations advise that they should be sent to the reserve on their own side, but the term has a very elastic meaning; besides who is to know that there is to be a reserve at that particular moment, while on the other hand, the Commander of the force may just previously had occasion to call up the reserve.

This method is therefore unsuitable.

It would be better to order the troops placed out of action to act as follows where they stand, *viz.*, Infantry to pile arms, Cavalry to dismount, and Artillery to turn about their guns.

The troops at this particular moment would then be stationary, and the Umpire-in-Chief could decide how long they should remain out of action, and direct them to march to some point behind their own line. They should be accompanied to this point by an A.D.C. or Orderly to the Umpire in question, to prevent their being attacked, *en route*.

Another method of showing that troops are out of action is this: The Umpire orders a body of troops to retire a certain distance. This is intended to denote that the position of the force is become so critical and its losses so great that there would have been little likelihood of its being able to hold its own in real war. For example, see Appendix, Fig. 1.

Frequent complaints have been made at manœuvres of this habit of re-employing shaken troops as if they were fresh. To a certain extent this can be guarded against, and this point I consider most important for on it depends whether a manœuvre is carried out on correct tactical principles or not. Another very common complaint is that at manœuvres, movements round or against a flank are conducted in an incredibly unnatural manner, and that the fact is ignored that the only way of successfully executing a flank attack against an enemy acting on the defensive is, *viz.*, that of first attacking and defeating one of the two faces, and then attacking the other.

It is difficult to apply the principle of the inner lines of operations to tactics after the fight has begun, but it is by no means impossible to achieve success by it in war. In manœuvres it is nearly impossible to benefit by such a method in consequence of the reappearance in action of troops which would have been annihilated. For example, see Appendix, Fig. II.

Umpires must on all occasions maintain the so-called conventional rules. Without these accidents might occur during manœuvres, and quarrels easily arise in the excitement of the moment.

When a position has been taken one often hears said: "No hurry, give them time to retreat!" It would appear hardly possible that such a false principle should be taught at manœuvres. That only should be done which is technically right. When a body of troops has advanced as far as the edge of a wood they would scarcely halt and remain there till the enemy chose to retire. On the contrary they would at once charge and try to drive them out of the wood and pour their fire into them in the open on the far side.

Umpires, under these circumstances, should order the beaten troops to fall back, but should see that the proper interval is maintained. When the attacking troops, having carried a position, wildly pursue and get out of hand, Umpires must not be oblivious to the effect of a well-directed counter-attack.

We naturally only attempt to indicate generally the line of action to be taken by Umpires. To lay down particular rules would merely cause them to fall into the very errors we wish them to avoid. Military knowledge and skill can be his only guides.

Umpires should never allow the men of the attacking force to pass through the defenders' lines.

If a Commander allows his men to do so, he should be reported to the Umpire-in-Chief. In this case the "halt" should be sounded, and affairs put on a proper footing.

An error to be avoided, as being a disagreeable state of things for the troops, is the non-presence of an Umpire when a collision occurs.

It is on such an occasion the duty of the Commanders to order their men to stand fast until the arrival of an Umpire.

But the manœuvre will have been spoilt. It will not be an example of what would have occurred in real war, as the compulsory inaction of the attacking line may cause the whole situation to be altered, very likely by the arrival of reinforcements.

The last point to be noted is the nature of the country.

We take it for granted that the generally-accepted opinion as to the nature of a good defensive position is thoroughly understood, *vis.*, an open field of fire, and, in the case of hilly ground, gradual slopes.

The Umpire must be able to make a rapid reconnaissance of the ground before the moment of collision arrives. He should ascertain if distances in front of the position have been measured and marked in order to facilitate correct aim, if natural features would give any clue to distances, and he should observe the lines of retreat.

He must decide in his own mind if the country would or would not facilitate an attack.

If the defence is properly conducted, the attacking force should be ordered to halt or retire for some time, when they come upon large, substantial buildings, such as churches, &c., which are in possession of the enemy.

If the troops are fatigued, if they have had a long march to the scene of action, or if it is very hot or dusty, the Umpire-in-Chief can, if opportunity offers when no interesting crisis is impending, order the 'halt' to be sounded for a short time while the action is still in progress. But the case would be very exceptional, and only be resorted to in extreme emergency.

APPENDIX.

EXAMPLE I, FIG. 1.—

Case of an attacking force being ordered to retire by an Umpire before delivering the final charge.

"Let us suppose a Battalion of Infantry to have advanced from the direction of the wood D on the sketch, with the object of storming the enemy's position at A.

"When the attacking force has arrived at a distance of about two hundred yards from A, and having no reserves is preparing to charge, the Umpire interferes, and gives the following decision :

"That Battalion C is to retire to the wood D without delivering the final attack. Furthermore, he informs the Commander of the defending force that after a quarter of an hour for preparation he can assume the offensive.

"*Reasons for his decision.*—That during its advance across the open space between the wood D and the position it now occupies, Battalion C has been hopelessly exposed to the defenders' fire, and would in real war have become too demoralized to give any hope of a successful assault.

"That in the defenders' case these latter would have so far gained in *morale* by the failure of the attack, to justify their Commander in leaving his position, and conducting a well-ordered pursuit."

The above example is given by Boguslawski, but I will add a few comments to what has been already said.

As any decision on a tactical situation must always be open to criticism, the question which arises before us is this : What other course or courses could this Umpire have adopted ? It is clear that there were two open to him.

In the first place he might have refused to allow Battalion C to advance further than wood D, on the ground that in real war it would be impossible for it to advance over the open space in front, without being destroyed.

Again, he could have allowed it to advance and charge the position.

The first decision could not be called incorrect, but it would have deprived the movement of all interest in putting ideas into the Commander's head, which he ought to have possessed himself, and cramping his action.

Has he done everything in his power in his present miserable condition to guard against further disasters?

If a Commander retires in a wrong direction, or does not make use of the cover the ground affords, he is to blame, although it may in some extreme cases be wise to withdraw the men from under fire as expeditiously as possible.

An Umpire must never allow a retreat to be covered in an impossible manner.

Let us take the case of two battalions attacking a third, occupying a ridge. The attack is declared to be successful: now what could take place in war? The attacking force has reached the crest of the hill, and the defenders will, if the defence has been an obstinate one, already have developed all their resources, and will be driven back along their whole line, exposed to the enemy's deadly fire. If, however, after the attack has been pronounced successful, the Commander of the defensive force orders, say a Company, to line the brow of the hill while the remainder retire one after the other, thus preventing the attacking force from gaining the summit and pouring their fire into the retreating enemy, the Umpire should at once interfere, and put a stop to this unnatural state of things.

Some people would call this a well conducted retreat, but it is a false notion altogether. In war, the advancing attackers would sweep away the Company on the crest; it would not trouble them at all.

Such proceedings give an air of unreality to the manœuvres, and yet we constantly see them done.

If troops are directed to abandon their position before the attack has been delivered the case is quite different, and a gradual successive retreat of the various tactical units may be the proper course to pursue.

By this arrangement there is a chance of deceiving the enemy, but should he perceive the movement and attack, in order to turn the retreat into a rout, the Umpire must allow him to do so and give him every credit. This is like real war, and is tactically correct.

Both sides ought to have an opportunity of seeing the consequences of a defeat of either.

But this is impossible if the 'halt' is sounded the moment the attacking force begins to charge.

It is by the fire that the victors bring to bear on the retreating enemy that one sees most clearly if an attack has been correctly begun and correctly carried out. The whole use of one's labour is thrown away if an example is not applied.

Only when standing on his gained position, pouring his fire into the fleeing masses of his foe, while the Cavalry charging round his flanks are throwing themselves on the disordered crowd, and the Artillery dashing up unlimber, can a soldier realise how terrible are the losses resulting from a retreat in war—how stubborn must be his defence, how determined his advance.

It is impossible, in time of peace, to represent the capture of a village, after a determined resistance, and to make the street fighting more real, an Umpire ought to order the advance to be slower at one point than another.

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enemy's position, and the Infantry pushed forward to support this attack.

Then the Umpire decided that the northern Battalion must leave the village, which it did, and retreated across the open under a heavy fire from the victorious enemy.

The Commander of the Southern force next ordered his Batteries to take up a position on the height at IV, and directed Battalions Nos. 1 and 2 to march along the village street to its west end and fall on the enemy's left flank.

The execution of this well conceived plan, however, was hindered in this manner: no sooner had northern Battalion No. 1 retired about 250 yards north of the village than it halted, fronted, and again advanced to the attack.

The consequence of this move was that the Commander of Nos. 1 and 2 Battalions had to leave the greater part of his force to guard the north end of the village, and could only spare two Companies to carry out his General's plan.

These arrived in the nick of time, and successfully threw themselves on the left of the Northern force, now in full attack.

But two Companies could make no impression, and were soon pushed aside.

In a word, the intention of the Southern Commander, so cleverly and boldly conceived, was frustrated by the unnatural turn affairs had taken at B.

It was the duty of the Umpire on the spot to have prevented this, and to have seen that "the dead did not come to life."

I have quoted the above example, the second and last given by Boguslawski, to illustrate his remarks on Umpiring, because I consider it instructive and interesting, and actually took place at the German manœuvres; but I am of opinion that it is not necessary to impress upon our Umpires the unwisdom of allowing the "dead to come to life again." At our manœuvres there is a great deal too much "putting out of action" going on, although the reverse is the case in Germany.

An unsuccessful charge and a whole Regiment of splendid Cavalry full of dash and spirit is ordered to dismount and consider itself wiped out.

This would never occur in action.

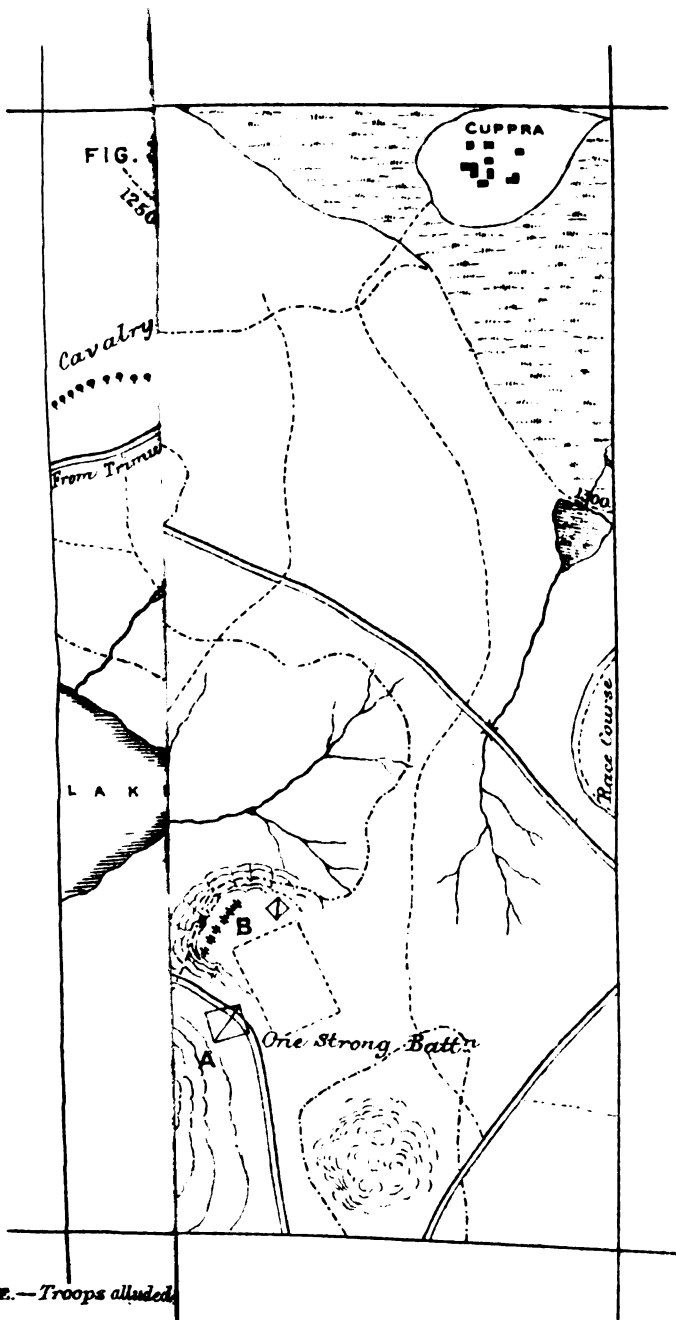
Infantry, in nine cases out of ten, are given credit for being better shots than they really are, and Troops, Companies and Batteries are put out of action, who, in war, would not lose more than half-a-dozen men.

We have only got to look up the statistics of the late wars in Europe to verify this statement.

It would add much to the reality of our manœuvres if the proper value were put on the actual life-destroying capacity of the different arms of the service.

EXAMPLE III, FIG. 3—

Case of a field day at Secunderabad, in September 1884, in which the decisions of the Umpires on various phases of the action are challenged and discussed.



NOTE.—Troops alluded

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GENERAL IDEA.

Moul Ali represents a detached fort, weakly garrisoned from Trimulgherry (white.)

A force of the three arms (red) threatens the white force. From information received fears are entertained by the Trimulgherry force for the safety of the garrison of Moul Ali.

SPECIAL IDEA (WHITE.)

14th Hussars.
D/1st Hds. R. A.
1/3rd do. 4 guns
4/1st do. 3 guns
2nd Mldr. Regt.
17th M. I.
31st M. I.

Troops as per margin paraded in drill order and marched to re-inforce detachment at Moul Ali, with orders to engage enemy wherever he was encountered. Support was promised, if required, from Trimulgherry.

SPECIAL IDEA (RED.)

3rd Lt. Cavy.
1st Cavy. H. O.
M/B R. H. A.
3rd Bty. H. O.
2nd R. S. Fus.
4th Infy. H. O.

Force as per margin marched from their Camp near Bolarum at day-break in order to capture the Fort before arrival of re-inforcements.

It is sufficient to state that the white Commander marched straight for his object, relieved his fort, and, learning of the enemy's approach from the north, formed his force up in the position marked on the map (blue.)

By about 10-30 the red Commander had reached the position marked (red) on the sketch, and rested his Infantry, under cover of the hills, for about a quarter of an hour.

Observing that the enemy's line was somewhat extended he determined to hold his centre with his left Battalion while he endeavoured to drive in his left with his right Battalion.

The 4th Infantry Hyderabad Contingent were ordered to gain ground to their right, with a view of supporting with their reserve, if necessary, the right Battalion.

The whole of the Cavalry was directed to make a turning movement to the westward, and to pass round the enemy's left flank and rear.

Now what took place was this : Red's right Battalion (R. S. Fusiliers) advanced direct on the village of Chapangoodium, and being in superior strength were permitted by the Umpires to drive the Battalion in the front before them into the village.

The 4th Contingent Infantry, however, moved somewhat slowly across the open, and were hotly engaged with a Battalion in their immediate front, and lost two companies, put out of action for being exposed to fire of enemy's Infantry.

At this crisis the "general halt" sounded. White's right Battalion took no part in the action.

I will now proceed to comment on the decisions of the Umpires on both sides with a view to ascertaining if they tended to make this mimic battle as like a real one as possible.

Early in the day one squadron of Hussars were permitted to hold the southern exit of the Cuppra Tank bund for more than half-an-hour although all this time exposed to the fire of a Horse Artillery Battery

well placed, so as to enfilade the bund at 1,800 yards distance. As not a single shot was directed against the Battery, it may be presumed that its practice would have been fairly good.

The Officer commanding the Battery complained bitterly of this, but not without reason. The Hussars were under no cover that would have been a protection against shells.

Half an hour later on two guns R.H.A., which had been pushed to the front with the greater part of red's Cavalry, but with only a small escort visible from the enemy's side, were charged by a squadron and a half of Hussars.

The latter had so far the initiative that they would have succeeded in reaching the guns in superior numbers to the escort, but the appearance of several troops of hostile Cavalry on the scene would in real war have forced them to beat a hasty retreat.

As it was, both sides were halted and the numbers taken, and the Umpires decided that a Squadron should be put out of action.

It is true that in the end the red horsemen were nearly double in numbers to the whites; but is it probable that the latter would have lost two-thirds of their numbers in an unimportant Cavalry *mêlée*. It is more probable, perhaps, that half a troop would have been nearer the mark.

Boguslawski is of opinion that it is above all things undesirable that Umpires should err on the side of over-estimating the loss on field days as the troops thus ordered to consider themselves dead men or prisoners are unable to derive any further instruction from the manœuvres.

We now come to the action of the Artillery on both sides during the day.

The Horse Artillery of the red force being first on the field, took up a position on the rocky hills at G, and immediately engaged in a duel with the enemy's guns posted at A, B, and near the village. This Battery was unavoidably a good deal exposed.

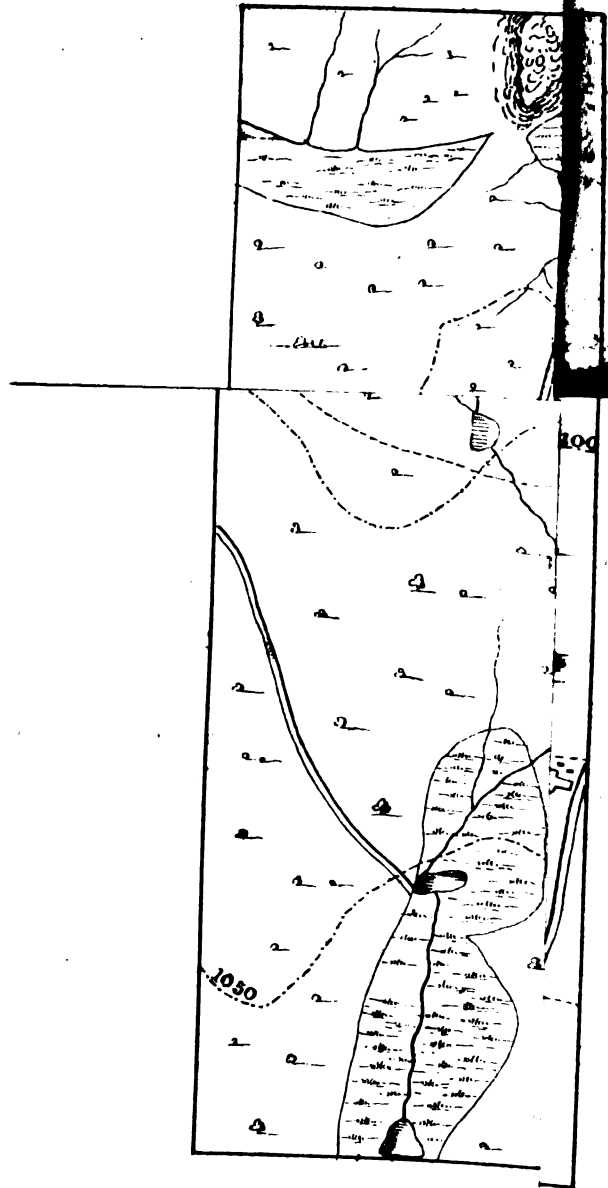
This made thirteen guns including three 40-pounders, all well posted under cover, against six light field guns much exposed.

The cannonade had lasted about twenty minutes before the arrival of the Contingent Battery on the left of the Horse Artillery, made things more even, but the former was much exposed to the fire of the Batteries at A and B, and the advantage remained still on the side of the whites.

Now let us see what action was taken by the Umpires to make this Artillery battle as like the real thing as possible.

Not a single gun of either of red's Batteries was placed out of action, nor was a man or horse adjudged to have suffered harm, notwithstanding the manifest superiority of white's Artillery from start to finish.

During the final advance of the attacking Infantry, two Companies of the 4th H. C. Infantry were put out of action as being exposed to fire of guns at A, but it is doubtful if, in a real battle, the guns here would have been at liberty to direct their fire at the enemy's Infantry until they had silenced his Batteries or subdued their fire to some extent. This, however, is purely problematical. The R. S. Fusiliers, being



superior in numbers, were allowed to drive the Battalion in their front headlong before them into the village of Chandagoodium, but as the skirmishers of the latter had to be routed out of their cover in the wood and behind the rocks, this could scarcely have been done, as it was on this occasion, without suffering any loss whatever.

EXAMPLE IV, FIG. 4—

*Case of a Cavalry field day which took place at Secunderabad in October 1884, in which the decisions of the Umpires are considered.**

GENERAL IDEA.

A Cavalry force from the North having reconnoitred Trimulgherry Entrenchment on the morning of the 8th October, retires on the main body, posted at Kompully.

SPECIAL IDEA (BLUE.)

14th Hussars, 3 squad-
rons, 210 sabres.
1st Cav. H.C., 70
sabres.
M/B R.E.A.

Troops, as per margin, will parade half a mile west of Ranajeegoodium Village, and be disposed as a force retiring on Kompully.

SPECIAL IDEA (GREY.)

3rd Lt. Cavalry, 3
squadrons, 140 sabres.
1st Cavalry, H.C., 3
squadrons, 210 lances.
D/1st R.E.A.

Troops as per margin will parade at Usmempetta, at western border of Dhoby Tank, and push back reconnoitring party of enemy, and, if possible, prevent their joining the main body.

The plan adopted by the grey Commander is thus stated in his own words in the official report :

"3rd Light Cavalry to work round enemy's flank. Royal Artillery follow retiring enemy and open fire from good positions with one squadron Hyderabad Contingent as escort.

"Two Squadrons to push on and keep constantly threatening enemy's centre and left—the object being to draw him away to his left as much possible, so as to widen the distance between him and Kompully on his right rear, and enable me to pass round his right and separate him from his main body at Kompully."

The plan of the blue Commander was to retire by alternate wings which were to afford one another the necessary support, four guns and two squadrons in one wing, and two guns and two squadrons in the other; circumstances to determine the division of the Battery. Great care to be taken in the selection of positions.

These plans were carried into execution with but little departure from the original designs, and the day's manœuvring was made up of a number of Cavalry encounters—many more than could possibly have taken place in real war—in which, according to the opinions of the umpires, both sides would have suffered heavy losses.

* This field day is of special interest, because the distinguished officer who performed the duty of Umpire-in-Chief (Sir Charles Gough, V.C., K.C.B.) holds peculiar views on the subject of Umpiring. He is of opinion that the system of sitting troops 'out of action' is prejudicial to the interests of the service, for the reason that the officers and men thus rendered *hors de combat* can derive no further benefit from the manœuvres. Boguslawski expresses himself somewhat similarly.

In addition to the Umpire-in-Chief (Sir Charles Gough, V.C., K.C.B.) one Umpire and two assistants were attached to each side, and their reports are before me. I was also present during the operations.

The Chief Umpire on the blue side thus reports the first collision :—

“At 7-8 the enemy's scouts retired and the Battery opened fire on the enemy's Cavalry, which was drawn up apparently in line of squadrons, about 300 yards off. The enemy's Artillery and some dismounted men now opened on our right wing. This was not noticed by the blue force for about five minutes. Blue was therefore deemed to have lost a troop, but by order of the Umpire-in-Chief no troops were to be put out of action. The losing side was ordered to retire.”

It does not appear clear why this Umpire adjudged so heavy a loss to blue's right wing. If such a thing was possible in real war that a body of Cavalry would remain halted for five minutes under the fire of a hostile Battery, the guns would not work so much havoc in their ranks, but it is certain that the first shell or two would make the Commander decide pretty sharp whether he would advance or retire. He would not stay to be made a target of.

As the affair actually took place it is quite probable that the blue right wing Commander was unaware that the fire of the guns was directed against his Squadrons. Mistakes of this sort must always be of frequent occurrence at manœuvres.

The Chief Umpire on the grey side thus reports the second Cavalry charge which was delivered on this day :—

“Shortly after 7 o'clock the Commander of the grey force sent off the 3rd Light Cavalry with instructions to take up a position behind the rocks to the north, close to the Bowenpilly and Bolarum roads. This Cavalry had scarcely advanced 170 yards when the enemy were seen about 500 yards in front, drawn up in line, three guns in the centre, with one Squadron on each flank.

“The grey Artillery was at once ordered up, and commenced firing from behind cover, and must have inflicted very heavy loss on the blue force.

“In the meantime grey's Cavalry deliberately charged blue, and both sides being of equal strength, they were ordered to retire by the Umpire-in-Chief.”

This same action is thus reported by the Chief Umpire on the blue side :—

“The left wing advanced, and was charged by two Squadrons on the right of the enemy's line. The left troops of the leading Squadron (grey) got in advance of the right, and would have been ridden down by the Hussars. The remainder of the leading Squadron (grey) would have taken the Hussars in flank. Blue's support would have taken grey's right troop in flank, and grey's support (one complete Squadron) would have taken blue's support in flank.

“The Umpire-in-Chief decided that both sides should retire, and another advance was immediately afterwards made by both blue Squadrons, who were met by two Squadrons (grey).”

It would certainly appear from the perusal of these reports that the

advantage rested with the grey : for it may be taken as a maxim in Cavalry tactics that the Commander who holds the last Squadron in reserve wins the fight.

In any case the action of the blue left wing Commander in attempting to advance so soon after a severe fight in which, if not worsted, he must have undergone some losses, savours somewhat of the unreal.

Boguslawski is very emphatic on this point, and demonstrates that it is the duty of the Umpires to prevent this sort of thing, and to prohibit any movements which would not be possible in real war.

The Umpires refer to several other occasions on which both sides charged each other with no decided result, which would have been impossible in war, and ought not to have been sanctioned.

The most important event referred to is the capture of two of blue's guns by grey's Cavalry.

The grey Umpire thus reports the affair : " Grey's Cavalry steadily advanced, and, observing two of blue's guns limbering up and without any escort, charged, and took them with one Squadron, which was shortly afterwards followed by another.

" These guns were in grey's possession for fully *five minutes* when two of blue's Squadrons from the right charged and tried to recapture the guns.

" The sides being now of equal strength, I ordered both to retire."

The blue Umpire's account is this : " The enemy's right wing perceiving two guns to be unprotected, sent one Squadron against them as they were retiring eastward, and took the guns, which were immediately recaptured by blue's Squadron from the right wing.

The grey Squadrons having no support could not have retained the guns, and were ordered to retire.

The other right Squadron (grey) charged the two guns, which had not halted when captured, and thus came under fire of some of blue's dismounted men, posted under cover, and were ordered to retire. Both sides charged each other with no decisive result, and in quick succession, which would have been impossible in war, and ought not to have been allowed by the Umpires.

There is apparently a very important difference of opinion here between the Umpires on either side ; indeed each seems to have arrayed himself on the side to which he is attached, which is entirely contrary to the spirit of Umpiring. The one says that the guns were taken by grey, and were immediately recaptured by blue, while the grey Umpire affirms that they remained at least five minutes in grey's possession and that grey's supports were at hand. The question was settled on the spot by the Umpire-in-Chief, who decided that grey could not have retained possession of the guns.

There were no decisions of peculiar interest on blue's right wing, and grey's left. Grey manœuvred pertinaciously, but with no very marked success, to get round blue's right rear, and made use of dismounted men to some extent. One troop of grey held a good position in some trees, but finding it dull work, after a few volleys, mounted and charged two Squadrons of blue's Cavalry, and would have been broken up and dispersed in real war.

The action of the Artillery throughout was not of a very interesting nature.

In his 'decision' the Umpire-in-Chief pointed out that the two guns were lost simply through the neglect of a wise precaution for all retiring forces, *viz.*, to carefully reconnoitre the ground in rear.

Had this been done the obstacle which stopped the guns (a ditch and bank), could have been ramped, and the guns pass over unchecked. It was through the neglect of a like precaution that General Massy lost his guns at Kabul.

I have not given the reports of the Umpires in much detail, only dwelling on their opinions on the most important points; but they evince the same tendency which I have previously referred to, of adjudging severe losses to one side or another at each event which takes place. Had this been a real action, it is probable that the retiring side would not have lost more than thirty men, and the pursuers about half that number. We have only to examine the reports of similar Cavalry actions in the Franco-Prussian war to verify this statement.

CONCLUDING REMARKS.

As this pamphlet is, as far as I know, the only work devoted exclusively to the subject of Umpiring, I will conclude by quoting what appears to me to be the most useful and important directions on the subject from official authorities.

91. Umpires must distinctly understand that their action is not restricted to the body of troops whose movements they are detailed to watch; again, it should be a point of etiquette with Umpires that, whilst holding themselves ready to decide a question arising between any body of troops, their own, or other, they should yet avoid interfering and pushing themselves forward into a dispute where the parties engaged are already provided with Umpires, even though these may be of junior rank.

96. When estimating losses, Umpires should remember that in actual warfare troops very quickly find out when they are under the enemy's fire, and immediately make such dispositions as may be in their power to shelter themselves from loss; while in peace manœuvres they may be theoretically annihilated by Artillery or Infantry fire from a distance without even being aware that they are the objects aimed at.

99. Umpires will limit their decisions to each particular incident without reference to its effect on the general manœuvres of the day.

109. Umpires must note down the exact time when each prominent feature of the day's proceedings takes place in view of making a final report at the end of the day.

Rules for the conduct of Field Manœuvres for Hyderabad Subsidiary Force.

38 A. In estimating losses sustained by a Battery in action, Umpires should frequently designate parts of a gun or equipment as disabled, *e.g.*, "near wheel horses of Nos. 2 and 4 guns," or "near wheel of No. 1, and off shaft, No. 5 gun disabled."

German Regulations
for the conduct of Peace
Manœuvres. Duties of
Umpires.

4. The Umpires must be present during all the important and critical moments of an engagement which takes place within their special district or sphere of action, and *they must interfere, when necessary, in order to ensure the proper conduct of the manœuvre.*

They decide solely with reference to the actual positions of the opposing sides, and without considering the ultimate consequences of these positions as regards the result of the entire manœuvre.

In the case of an action which would have, more or less, placed a body of troops on a field of battle completely *hors de combat*, the Umpire decides to what extent the troops are to be supposed to have been disabled, whether they are to be withdrawn temporarily from the immediate scene of operations, or whether they are to be withdrawn entirely.

If the latter course is decided on these troops are sent to the reserve and placed at the disposal of the officer directing the manœuvres, who may employ them in such a manner that the instruction, which it is the object of the manœuvres to impart, shall not be entirely lost to them.

6. Umpires are to prevent or decide against the following movements, which would not be practicable in real war: An excessive extension of the front in order to outflank the enemy; frequent detachments to turn his flanks; repeated attacks by the same bodies of troops without having been reinforced; undue separation of the three arms; a defence conducted by Cavalry alone, or a too constant contact of Cavalry with the enemy.

9. It is unavoidable that troops should frequently be brought under a close fire in order that *the action may be decided*; a timid endeavour to keep the troops beyond the range of a heavy fire would not correspond to the conditions of actual war.

10. It must be borne in mind that a General who orders Cavalry to charge is generally obliged to dispense with its services for some time even under the most favourable circumstances; Cavalry which has been decisively repulsed, requires a long time to reorganise, and very possibly may not be in a serviceable condition for the rest of the day.

13. In Cavalry attacks the chief points to be considered by the Umpires are the following:—Whether the attack could have been directed against the enemy's flank; whether the line arrived at the prescribed distance in good order; whether the charge was supported by the fire of the troops, or whether the Cavalry in advancing were exposed to the fire of the enemy; whether the reserves were at hand, and what part they took in the engagement.

19. It is the duty of the Umpires to see that Batteries fire not only from the proper position, but also at the proper object.

This object at the commencement of an action is usually the enemy's Artillery.

20. If a Battery is captured during manœuvres, the cause is to be carefully gone into by the Umpire, for it will often happen that the Battery is not to blame, but rather that the attacking force is at fault.

There are occasions, moreover, in which the Artillery is bound to maintain its position tenaciously to the last, and when the loss of guns may not only be justified, but may be regarded as honourable.

The same causes which decide victory or defeat in war must determine the success of the operations undertaken during a peace manœuvre, and the accepted rules of tactics are to be the only guides on which the decisions of the Umpires are to be based.

Lecture delivered at the United Service Institution on 2nd October,
1885.

THE HON'BLE SIR STEWART BAYLEY, in the Chair.

STOCK FARMING IN INDIA.

By Colonel J. HUNT, C.B., *Commissary-General-in-Chief.*

THE subject of my lecture is Stock Farming in India as connected with hay and other fodder farming.

My object in delivering this lecture is of a two-fold nature—

1st.—The strictly professional motive of improving the economy and quality of the English soldier's meat ration.

2nd.—The advancement and prosperity of Her Majesty's Indian Empire, in the improvement of the stock of sheep, cattle, and horses, &c., and in the consequent improvement in the trade in wool and hides, as well as in that of food supply.

The subject is very closely connected with the agricultural interests of the country in regard to hay-farming, a matter which in proportion to the rapid extension of cultivation of food grains and of crops utilised in production of clothing, &c., is daily forcing itself upon the notice of the public and of Government with increased urgency; and in regard to which I must preface my discourse with some remarks to enable you to appreciate the force of the facts which I purpose laying before you.

It is now some two or three years only since the difficulty in procuring forage for the mounted branches of the service, and at the same time dealing fairly with the interests of the ryots and landholders in protecting their land from the ravages of the grass-cutter, has induced the Government to inaugurate a system of preserving Cantonment lands for production of hay, and of starting grass farms in the neighbourhood of large Cantonments where the fodder difficulty was particularly apparent.

The officials employed on this duty have found it somewhat uphill work, and work of an unpopular nature, owing to the necessary uprooting of time-honored customs and institutions which formed some of the items of the easy-going life so acceptable to the European constitution in the, to it, trying climate of India. But very material and important results have been attained, which may be summed up in the fact that it has been demonstrated that here, as in England, to utilise meadow land for hay-making instead of reserving it entirely for grazing is a most profitable procedure; and that, so far from grazing land being injured by taking an annual crop of hay off it, it is improved; and while the prospects of the hay crop are by no means damaged by grazing off the first growth of grass which springs up with such rapidity when

the monsoon sets in, there is good grazing also to be had from the after growth when the hay has been removed.

We have in our Indian Stud, and other farming operations, long since realised that grass land will not, as grazing land, support cattle throughout the year, and that to obtain the full value from such land resort must be had to hay-making; and we have also proved that excellent hay, which will retain its nourishing properties unimpaired for years, is obtainable from properly protected land all over the country.

The value of the experiments carried out within the last two or three years consists largely in this knowledge having been disseminated through the country to our Cantonments from whence it will spread rapidly to the zemindars and ryots; and when they realise that properly cured hay finds a ready market, and that it is the determination of Government to preserve to them their lands from trespass of any kind, and further that it is greatly to their interest to raise hay with the object of breeding superior cattle, sheep and horses, I have no doubt that the fodder difficulty will quickly become a thing of the past, and I confidently expect that in a very few years hay will be abundantly procurable, not only at every Cantonment in India, but in every halting place throughout the country.

Officers like Sir H. Macpherson have done the State most valuable service in the interest displayed in this question of grass supply and their personal exertions to further it, but I do not go with them in their ideas of the necessity of ploughing and top-soiling to raise hay in India where the heavy rainfall of the monsoon of itself sufficiently loosens the soil and fertilises it.

The gutta-bunda system under which the Indian agriculturist divides his field into a number of squares marked out by a slight elevation of the soil a few inches high, answers every purpose when the rainfall would not otherwise lay long enough to penetrate and loosen the soil. As for manuring and top-soiling it is quite needless. The concentrated rainfall which we have in the monsoon, does this work, flooding the country, and depositing wherever nature or art has provided the means of retaining it, *i.e.*, nature by depressions in the plains, or art by something in the gutta-bunda line, ample manure, washed from places where the water cannot lie. Ploughing and top-soiling produce rank vegetation and render it too expensive to contend with weeds and injurious herbage. I can point to places where grand hay is collected after every monsoon from ground where the water is thus naturally detained for a while annually, and where never a hand's turn has been done since creation in the way of ploughing, top-soiling or manuring.

The Indian Forest Officer will tell you how by the simple process of fencing in ground for arboriculture, and in the interests of the growth of trees preventing the grass from being grazed down throughout the year, the hay crop has been increased, where such operations are carried on seven-fold.

The experience of the last year or two leads me to most strongly deprecate, not only ploughing and manuring, but cultivation of anything

but hay proper ; and I think that the time has come to regulate the energy of certain of our enthusiasts whose ambition, not content with increasing the Cantonment income by the cultivation of various crops which they consider more profitable than hay, does not stop quite short of raising standing crops of Nankin suits of Khakee uniform on their parade grounds.

I have, I think, dwelt sufficiently on hay culture to indicate how greatly stock farming is dependent upon it. I now therefore proceed with the subject of breeding and rearing cattle of all kinds, sheep, horses and other beasts of burden.

There can scarcely be any one present here to whom it is not apparent that vast improvement is possible in the breeds of horses, ponies, cattle and sheep in this country. The country is a pastoral one ; it affords splendid grazing in season, and is capable, without encroaching upon the growth of grain crops, of producing dry fodder in unlimited quantities to supplement grazing, and it is because its resources in fodder are undeveloped that the breeds of all kinds of domestic quadrupeds are so defective.

The people, content with ploughs and agricultural implements of patterns with which Noah and his sons must have been familiar, in the matter of fodder rest satisfied with bhoosa, *i.e.*, the straw of wheat, barley and vetches, partly broken up in their rude process of treading out the grain, in lieu of threshing and partly chopped up.

They also store some supply of kirby, *i.e.*, the dry stalks of Indian corn, "jowar," bajra, &c., and in certain districts, like Gwalior, dry grass, I cannot call it hay, is stored for plough cattle and horses. The storing of this dry grass is entirely subservient to crop growing, and as the hay ought to be cut and cured in September when their ploughing operations commence, they will not accord it the necessary attention and labor ; hence it is allowed to stand for months until the sap has receded from it, and it is of little or no value when it is collected. The value of properly-cured hay may be estimated from the following :—

1½ pounds of green grass are the equivalent of 1lb. of dry grass. The regulation ration of army horses is 30lbs. green grass or 20lbs. hay, but this hay is the ordinary dry grass procurable in Indian markets. Of properly-cured hay, 10 to 12lbs. is given by the livery-stable keepers in Calcutta and is found an ample quantity. There would thus be a saving of about 18 to 20lbs. by substituting properly-cured hay for the green grass ration of army horses, and of 8 to 10lbs. by substituting it for the present hay ration of these horses.

The quantity stored of bhoosa, kirby, &c., which in itself is very deficient of nourishment and is only at all fit for horned cattle and sheep, is scarcely equal to the requirements of plough cattle and draught bullocks, in regard to which, and to horses for whom short grass is scraped from the surface of the land, I may say that stall feeding amongst the natives is confined ; and it is to this absence of all attempt at cultivating and setting land apart for the growth of fodder that the failure of our stud breeding operations to induce the natives to practise

the systematic breeding of stock is attributable. We have in fact first to get them to interest themselves in fodder cultivation and then the stock breeding will follow, and the combined measures will result in, I am convinced, an extraordinary increase to the wealth and prosperity of the country.

The great difficulty in inducing the natives of India to cultivate fodder is that, while such of any kind is procurable, he does not care whether it be the best or not, and he will not spend money to improve the quality. In the United Kingdom cultivation of fodder is a necessity, the proportion of cattle to cultivated land being 29 per 100 acres, the average in India being only 16·5, while the proportion of waste land in India affording free grazing is enormously more than in the United Kingdom.

As regards my primary object in addressing you, *viz.*, the improvement in the food of the English soldier, I will now place before you some statistical information which will perhaps facilitate my work.

In the three Presidencies the latest returns show the annual consumption of cattle and sheep in the supply of rations to English soldiers to be as follows :—

			Male.		Female.	Total.	
Bengal ...	{ Cattle ...		3,177	...	60,409	...	63,586
	{ Sheep ...	...	78,169	...	16,577	...	94,746
Bombay ...	{ Cattle ...		1,130	...	21,487	...	22,617
	{ Sheep ...	...	66,605	...	14,280	...	80,885
Madras ...	{ Cattle ...	...	1,022	...	19,426	...	20,448
	{ Sheep ...	...	59,935	...	13,187	...	73,122
Total head of Cattle				...		...	106,651
" Sheep				...		...	248,753

Of the cattle 101,322 were cows and only 5,329 males ; and of sheep 204,709 were males and 44,044 ewes.

The proportion of female horned cattle slaughtered to that of males is very startling. It indicates, in my opinion, that while the supply of cattle is as yet very plentiful, in so much as that the necessity for reservation of a large proportion of females for brood purposes has not been forced upon the attention of the breeders, a very destructive system of slaughtering cows exists which must in the long run materially affect the market.

As regards sheep, the proportion of ewes to males slaughtered, 44,044 of the former against 204,709 of the latter, is reasonable, and is due to restrictions having in 1873 been placed by Government on the number of ewes to be slaughtered by the Commissariat Department. This was occasioned by alarm being felt even then lest scarcity should result from the indiscriminate slaughter of male and female sheep. The measure can, however, have had scarcely any effect, the number of sheep killed for troops being quite insignificant compared with that of the number consumed by the population, and it is my opinion that the scare of 1873 was by no means groundless, and that since then the supply of sheep has diminished.

The export of hides amounts to 8,605,796* annually, which, set against the number of animals slaughtered for the use of the troops, shows that the consumption for this purpose is a mere drop in the ocean, the more so when it is remembered that the expenditure of hides in India for all the different purposes for which leather is used is also enormous.

From the cattle slaughtered for ration purposes the average outturn of ration meat is 143½lbs. per head, and that of the sheep amounts to only 21½lbs.

These figures represent about one-fourth in each case of the average weight per carcass in England. Indeed, I may go further as regards mutton and say that an English leg of mutton weighs often as much as the average whole sheep in India.

As a rule the best of the slaughter stock comes into the hands of Government, so the average weight per carcass throughout the country must fall far below the figures I have named.

This would not signify if the quality of the meat were good. But I am forced to confess that it is very indifferent. The orders on the subject are that the troops shall be supplied with the best *grass-fed* beef and mutton. But in a country where for half the year the grazing is of the most miserable description, and where no attempt is made to store and preserve for stall feeding purposes the immense surplus of fodder produced during the other half of the year, and no attempt is also made at breeding and rearing for the purpose, it is clear that "bad must be the best of it." I have said that improvement in stock must follow improvement in fodder, but so bountiful is nature in the wonderful vegetation which starts every year with the fertilising monsoon, that I think I may qualify this opinion and say that, starting with that period, and storing the natural growth of hay, it is feasible to any one possessing grazing land to start the improvement in both matters simultaneously.

In England it is not beneath the dignity of noblemen to purchase young stock every year and turn it into their park land, reselling it with great profit the next year, and in the interim going to but trifling expense in supplementing the grazing.

In India the conditions are different, and such results would by no means follow turning stock into grazing land and allowing it to fend for itself. But if part of the land were set apart for hay-making and ensilage were resorted to in the early part of the monsoon, the system would be just as practicable and profitable in this country.

HIDES.				
* Calcutta	...	...	...	6,938,936
Bombay	...	...	...	625,000
Madras	...	...	...	1,041,860
Total				8,605,796
SHEEP SKINS.				
Calcutta	...	...	...	222,987
Bombay	...	...	...	2,850,000
Madras	...	...	...	8,865,720
Total				6,938,707

My personal experience as an Executive Commissariat Officer was that during the dry season, of the cattle and sheep brought for sale, I used to have to reject a large proportion, and I have constantly had the dealers, who are not in this country graziers, offer to sell me the rejected animals at half price or even less. In the case of sheep I have frequently been obliged to reject entire droves, not finding any of them fit for my purpose, and in regard to both sheep and cattle, I have no hesitation in saying that any person possessing or renting a tract of grass land within twenty or thirty miles of any of our large Cantonments, by purchasing stock during the dry months, allowing them to graze all over his ground for the first few weeks of the monsoon, and then reserving a certain portion of his land for grazing, and collecting hay from the rest of it, laying out a small sum in the purchase of kirby, and cultivating a few fields of lucerne, carrots, &c., could start operations with the monsoon, and turn out his cattle and sheep in prime order after a few months, increasing their weight very much and giving us a vastly superior quality of beef and mutton.

An enterprising person devoting his attention to this matter could, by selection from the ewes passing through his hands, start a small flock of sheep, to be gradually increased, to breed from. I could give him good rams obtained by crossing with the best English and Australian sheep at the Hissar Farm, and I think I could guarantee that the wool alone would pay the expenses of the flock. I should also be very glad to contract with him to purchase his live stock by estimated weight for ration purposes, and he would commence to recoup his outlay within the first three or four months. His expenditure in farm buildings, cattle enclosures, &c., would be but small, if conducted on the principle which I am now introducing at the Hissar Farm, where we find our object best answered by using light thatches supported on a few poles; and enclosures made by cutting and collecting the "jowassa," or camel thorn (the dry leaves of which afford an excellent description of bhoosa for sheep), and rolling it into hedges to form the enclosures.

I trust that in my journeying through the country this winter, I may find one or two Mahomedan gentlemen of means who would be willing to embark in such a speculation as this, and I am sure that in such case Government would be willing to assist, as far as circumstances admit, by granting easy leases of grass land.

As regards the Hindu section of the community whose religious prejudices would prevent their having anything to do with slaughter stock, an ample field is open to them in the setting apart of grass land for breeding horses, mules, plough cattle and sheep, the latter for wool; and if our District Officers and Political Agents will interest themselves personally in the matter, grazing and fodder farms will quickly spring up in different parts of the country.

I have alluded to the Government Cattle Farm at Hissar regarding which I will now put before you some details, as the farm, until within the last year or two, affords a very notable instance of the mistake of placing too great reliance on grazing to the neglect of the necessary storage of fodder to supplement the same—the principle formerly

observed at the place having been to store but a very limited quantity of hay, under the idea that to take more off the farm land would interfere with grazing.

This farm, which comprises 37,051 acres of grass land, is situated east of Delhi and Kurnal, and about the same distance, 100 miles from either, being now accessible from Delhi by the Rewari and Ferozepore Railway.

It was used by Government for stud and camel-breeding purposes as far back as 1845. From 1854 to 1875 it was under charge of the Stud Department. But for the last nine years it has been used as a cattle-breeding establishment worked by the Commissariat Department. I first made acquaintance with the place in 1857, during the mutiny, when I accompanied a column under General Van Cortlandt, C.B., in its march from Ferozepore to Delhi through Hurrianah. Within a year after that time I joined the Commissariat Department, and was stationed at Delhi, where I had an opportunity of realising the good work of this farm in breeding bulls for the improvement of the cattle in the neighbouring districts as well as in those more remote, for I was required to purchase some 1,200 bullocks for siege train purposes, and these I most easily obtained of the standard height of 52 inches and prescribed age of 5 years, the entire stock exhibiting very clearly the strain of the Hissar blood.

Three years ago I was called upon to make a special inspection of the Hissar Farm with the economy of which Government was greatly dissatisfied, the expenditure being very much in excess of the income. I found the main reasons for this to be, 1st—that sufficient stocks of dry fodder were not kept in hand to supplement grazing and to guard against fodder famines which were said to recur every three years; and 2nd—that the cattle, some 7,000 head, consisting for the most part of very fine and well-bred animals, were kept in a semi-wild state in very large herds, sufficient attention not being paid to weeding the stock and segregating the cows when in calf.

The results of this last evil and of fodder famines during which enormous losses of stock used to occur and the cattle become unfruitful, being that the average birth of calves fell as low as one in three years per cow, and that the cost of the bullocks raised on the farm for artillery purposes was enormous. Government sanctioned then the inauguration of a change of system under which the farm should be sufficiently stocked with fodder to go through two consecutive years of fodder famine, and the cattle divided into small lots with a larger proportion of attendants; and I am very pleased to be able to say that, thanks to the intelligence and energy of the Superintendent, Captain Marrett, the farm is now amply stored with fodder, and the average birth of calves has been raised to 75 per cent. per annum, *i.e.*, one per cow in eighteen months, with every prospect of further great improvement.

In storing the farm with fodder, the drain upon the supply in the daily consumption has been very materially lessened by resort having been made to "ensilage," some 12,000 maunds of which were for the first time stored last year and have since been fed off to the cattle.

Regarding this matter I will now read you a short paper by Captain Marrett, the Superintendent of the Farm.

Notes on Ensilage at Hissar, during 1884-85.

For the first time the experiment of storing fodder by siloing was tried at the Hissar Farm during the past year.

The fodder so preserved was of three varieties :—

(I) The coarse grass that had grown up during the rains in the lucerne gardens.

(II) The finer grasses obtained from the bhir or cattle pastures.

(III) Green jowar or cherry.

The results obtained fulfilled our most sanguine expectations, as the fodder, when taken out of the pits, was found in good preservation and was readily eaten by cattle both young and old.

2. Most of the pits consisted of holes dug in the ground 30' long by 10' broad by 8' deep, and a ramp or slope at one end to enable bullocks to walk down the pit was made slightly narrower at the bottom in order to obtain a wedge shape, and with a view to better compressing the grass ; but pits with straight sides proved equally successful, provided sufficient care was exercised at the time of charging them to have the grass well trodden down.

3. The fodder, as it was cut, was brought to the pit and evenly laid by

two men at the bottom to a height of about a foot, when a pair of heavy bullocks was admitted by means of the ramp and allowed to walk about until this layer was pretty well consolidated ; the same course was persevered with till the fodder was carried to about 6 inches above the ground level of the pit ; this was done to allow for the fodder sinking on the earth being heaped upon it.

The only pressure and covering the fodder received was that obtained by the earth excavated from the pit.

The time usually taken to fill a pit of the above dimensions was about 12 hours, and the contents averaged from 500 to 600 maunds.

4. On opening these pits between six and seven months afterwards, the grass was found to have sunk about a foot below the surface of the ground, and the fodder to be of a deep brown colour, full of sap, and emitting a strong pungent smell, though this did not prevent animals, to whom it was offered on the spot, eating it readily.

5. The total quantity of fodder siloed in the farm was about 12,000 maunds, and as this was only gradually expended, some pits were not opened till after nine months, and it was found in these cases that the smell was perceptibly less ; in fact there was little or no smell, and this was the more apparent in pits that had been charged with the fine grasses obtained from the bhirs.

6. Having noticed the fact, and with a view to still further testing the point, I had one pit charged with coarse grasses obtained from the sides of a water-course ; the grass was in seed at the time, and after a lapse of five months we opened it and found that the grass was of a very dark colour indeed, while the stench arising from it can only be compared to rotten fish ; it is needless to say that no cattle would eat it.

7. The experiment of leaving the fodder in the field is now being tried and the result will be duly reported.

8. The cost of preserving fodder in this manner is 14 maunds per rupee. The digging and stacking is of course a heavy item, and the cost of these ready made will considerably affect the result of the year.

9. The loss of weight in the fodder, at present, is about 35 per cent., which added to the cost of 14 maunds per rupee.—H. A. MARRETT, *Government Farm*.

Many of you must have had your olfactory organs fully assailed by the crude efforts being made to utilize this fodder when immature, and you will remember the fact which this paper discloses that if the fodder is mature, the truly awful smell which proceeds only after it has undergone a third or half the period fit for use, is avoided. The advantage of this method of treating rank and immature grasses and crops can be seen. The fodder thus made into highly nourishing fodder is incalculable in value, that at Hissar.

The fodder famines to which I have alluded are of necessity, the result of total failure of the crop. In the case of a good rainfall from 15th June to 10th July, then, and dry hot weather sets in and continues, the crop may say good-bye to the hay crop, and anticipate a similar fate also from complete failure of the rain crop. In such a season, the ensilage, the vegetation which springs immediately after the monsoon, would, in such a season, be of no use. I admit of any quantity of fodder being siloed during the monsoon.

In fact I consider that the farm at Hissar means, go through three or four consecutive bad seasons.

The success which has attended the district in the raising of the fine rams has not attended that of the fine rams raised in the villages. This is that the villagers have hitherto paid no attention to the necessity of preserving fodder for the winter. They shake their heads when you send them a ram, and say how could that animal find food in the villages.

They purposely raise the miserable creatures in the villages. These animals do, though how they do it is a mystery. They manage to get through the year with little or no food. They graze they pick up round the villages. It is a lesson for the unsophisticated townsman's idea of the value of food was produced by an alternate process of high and low. These unfortunate sheep, which for a season are, so to say, in clover, would turn out to be mutton. But the stuff they do produce is like that of the poor.

We have now enlarged our sheep-breeding operations at Hissar in view to contributing in a small way to the mutton-supply for the Troops at the nearest large stations, and I hope to demonstrate very soon that it pays to raise good heavy sheep by affording them good grazing and supplementing it by stall feeding ; and I am very confident that the improvement in wool, both in outturn and quality, by crossing the country sheep with good English and Australian stock, will go far to ensure the commercial success of the measure.

I have here some samples of wool from the Hissar Farm. They are specimens of the wool of the imported Australian south-down, of several of the pure country breeds, and of various crosses with English stock. I may mention that our mixed wool at Hissar, disposed of on the spot, realizes a very satisfactory increase in price on the country produce. The Superintendent is now making efforts to put his wool into the export marts, and I anticipate that, with due attention to the subject, we shall obtain very satisfactory results, the industry being as yet in its infancy with us. It may I think interest you to learn that wool has during the last 30 years increased enormously in price. Before the Mutiny the wool of 300 sheep would be bartered for a good blanket. Ten years ago it realised Rs. 5 to Rs. 6 per maund. It now sells at Rs. 20 to Rs. 25 per maund.

The large quantities of natural grass which are allowed annually after every monsoon to dry up and wither in thinly populated tracts of country, and the large quantities of hay annually sacrificed in the well populated districts, by indiscriminate grazing and the non-reservation of meadow land in its due season for hay purposes, represent so much hard coin allowed to melt away every year, and a proportionate loss of revenue to the State, while the scandal, still to a great extent perpetuated in the exercise, directly or indirectly, of a sort of prescriptive right to cut grass where we choose, is in my humble opinion a great reproach to us, and I think that it is very evident that rigid enforcement of the laws affecting trespass is called for.

I have little doubt that, not only in the vicinity of our cantonments but all over the country, if proper protection existed, the cultivation of hay which is unattended with the risk attached to the cultivation of grain crops in loss of money laid out in ploughing, seed, &c., by failure in the rainfall, would quickly be recognised by the zemindars as so lucrative as to justify a due proportion of their land being reserved as meadow land, but what would be the result with land so set apart as matters now stand ? I certainly would not be inclined to purchase the embryo hay crop under the supposition that it was in the power of the owner, with all the good will in the world, to protect it for me.

As I have before remarked, I have no doubt that in a very few years, if we now do our duty, our markets will be well stocked with good hay. But we must face the fact, excepting the case of the native cavalry, who are dependent upon their grass-cutters' ponies for transport, and for whom special arrangements must be made that our

dearly beloved grass-cutter with his *coorpa*, and his proverbial excess of olive branches, will disappear from the scene. Personally I should rejoice in being thus released of several of the numerous domestics I am now forced to maintain, and professionally I have no dread of inconvenience to the service resulting from the grass-cutter being a thing of the past, either in regard to cantonment life or to service beyond our frontiers, in reference to which last no doubt necessity will as usual prove to be the mother of invention, and we shall manage as other nations do when they start on the war path. If the independent Princes and Chiefs of India can only be got to devote attention to this subject of "stock farming as connected with hay and other fodder farming," what an addition to their revenue they will make. Take for instance His Highness the Maharaja Scindia of Gwalior, in whose country uncultivated land certainly predominates. This land may not, it is true, be capable of the irrigation necessary to grain cultivation, but that is no reason why the revenue from it should be largely confined to charcoal obtained from the stunted jungle, while every year a luxuriant crop of good hay is produced on it which, if cut in its season, would support stock farms for rearing horses, mules, cattle and sheep. I have some experience of hay-making in that country, and I am sure that the farmers could stack it on the spot at 12 or 14 maunds per rupee, at which rate, as regards cattle and horses, a daily ration of 8 seers per animal, which, allowing for grazing, would be heavy, would cost, per head all round, from Rs. 5 to 6 per annum.

OOTACAMUND, 14th May 1885.

To

THE HONORARY SECRETARY,

United Service Institution of India.

SIR,

I HAVE the honor to submit, for the approval of the Council of the United Service Institution of India, papers by Veterinary Surgeon Adams on Stable Management, which, I trust, they will consider worthy of publication.

Two of these are reproductions, but having been brought out in a Journal that is very little read by military men, and being so closely allied to the subject, their insertion will, I think, increase the value of the set.

The object Mr. Adams has had in view has been to, in as simple a manner as possible, draw the attention of horse masters to two facts, *viz.*, that the diseases he deals with may be prevented, and that this is best done by individually treating each horse—a fact which, though placed within the reach of all officers by the provisions of a recent Army Circular, is scarcely fully realised in the Service, where many instances will be found of every horse from one end of a stable to the other, is fed and treated exactly alike—a practice which all experience teaches us to be unsound.

Mr. Adams has endeavoured, while avoiding technicalities, to condense, for the use of those who may not have the leisure or inclination to wade through Committee Reports, &c., on these subjects, the chief points to be thought of and attended to, and I should like from the duty side of the question to add my testimony to the value of what he has written.

From actual trial, I can confidently state, I agree with every word he has written as to the practical benefits to be gained from adopting the various systems of feeding, &c., advocated by him.

That horses can be kept in order in the drill season on the Government ration ;

That one will fatten on what would almost starve another ;

That horses in slow light work require less grain than if in full regular work ;

That if undergoing severe hard work extra rations are very desirable, if not imperatively necessary ;

Are all facts that require no explanation, while the last statement I recently put to a practical test.

Wishing to try the marching powers of walers, I, at the end of the drill season, worked them up to march 50 miles in one day, having at my disposal Government rations and a large supply of private hay. The horses (160 of them) were trained for one month doing daily from 6 to 20 miles chiefly at a trot.

They did the march at the end of the month, without suffering in any way, lost flesh but put on muscle and condition, and the extra expenditure of food was 10 ton of hay, or an average of 4½lbs. daily per horse all round. On the principle advocated by Mr. Adams, some of these horses were getting, in addition to their ration of grass, 8 or 10lbs. of extra hay daily, while others got none; and some were on 12lbs. of grain while others only received 8lbs.

Without the increase of fodder a decided loss of condition would have ensued.

Mr. Adams' remarks on the treatment and use of green grass are also worthy of the closest attention, as being a most important, and *the most variable*, factor in the health or otherwise of the waler in India.

His remedy for skin disease, an universal scourge, I can vouch for having tried it constantly and never found it fail.

Take the worst case, regulate the grain ration to the amount of work, give an entire hay ration (12 to 15lbs.) in place of green grass, and the result will be in two or three months a complete cure:

As I feel confident that Mr. Adams' suggestions will prove most useful to many Commanding Officers, I trust they may be published.

I have honor to be,

SIR,

Your obedient Servant,

A. D. ANDERSON,

Major, R. H. A.

STABLE MANAGEMENT IN INDIA.

A few selections of papers written by

W. S. ADAMS, *Veterinary Surgeon (1st Class), Remount Depot,
Oosoor, Madras Presidency.*

PRESERVATION OF THE HEALTH OF HORSES BY DUE REGULATION OF THE GRAIN AND FORAGE RATION, AND OF EXERCISE, &c.

THE daily ration of grain for Government horses is fixed at 10lbs. per horse per diem. This, if the horses are in work, is at no time too much, but we know that, for the months of the hot season, the horses barely get exercise, and it is at this time that the feed should be altered. I use the word "altered" advisedly, for, although I would reduce the grain ration, I would at the same time increase the forage ration, for at this season the grass-cutter's grass is very poor, and contains a minimum of nutrition; if the grain be reduced without proportionately increasing the forage ration, or giving an equivalent of bran, the horses would fall off and be unfitted for the work of the drill season.

I will first note some of the ill-effects of over-feeding and under-working. There are two well known maxims, which will not be contradicted by any horse-owners:—

1st.—You cannot work a horse unless you feed him.

2nd.—You cannot feed a horse unless you work him.

It is impossible to lay down in an arbitrary manner the amount of nutrition on which a body of horses can be kept in health and condition, for there are so many circumstances to be considered in individual cases. It is necessary perhaps to lay down a fixed ration for all horses alike, as is the ration for soldiers; but men are capable of reasonably judging for themselves if they find this too much or too little; many leave a portion of their rations whilst others feel obliged to supplement it. With horses this must be done by those in charge, who can, by constant observation of the horses, see what alteration in their ration would be beneficial. All horses cannot be indiscriminately treated without injury being caused to some. At the Remount Depot, Oosoor, there is no fixed ration of grain for all horses, but they are treated individually as far as possible, and the ration is altered at the discretion of the Commanding Officer and the Veterinary Surgeon. This is as it should be, and that the system is advantageous is, I think, shown by the general health of the horses, which will compare favorably with other stations in the Presidency.

Our great aim must be to endeavour to keep up the equilibrium of waste and supply, bearing in mind that any deviation therefrom renders either an unhealthy state of the blood or absolutely causes disease. Any excess of nutrition which cannot be digested is not only wasted but is absolutely injurious, causing diarrhoea, &c., and when by animals of strong digestive powers more nutritive principles are taken into the system than are required, either undue fat is produced, or the blood is rendered too highly charged with nitrogenous matter becoming what is called "too rich," thus rendering the horses more liable to the infection of zymotic diseases, such as "anthrax."

I will here quote a para. from a most interesting and instructive article by Dr. Carpenter on "The Germ Theory of Disease," published in the *Nineteenth Century* :—

"All predisposing causes of epidemic diseases may be generalised under one expression, the accumulation of decomposing nitrogenous matter in the blood, either from its introduction from without (foul air, impure water, or putrescent food), or its excessive generation within the body, or by obstructive elimination of the normal waste such as results from bad ventilation or the misuse of alcoholic liquors.

"Zymotic poisons which have no action on pure blood will, by seizing on this appropriate pabulum, increase and multiply in it."

What is here described as the appropriate "pabulum" is blood surcharged with nitrogenous matter. This state is brought about by three chief means :—

1st.—By over-feeding and under-working.

2nd.—By causing an unusual waste of tissue by giving unusual work to horses not in condition.

3rd.—By neglect of sanitary precautions.

The Committee on Anthrax which assembled at Bangalore in 1884 quoted the above as a possible explanation of the immunity from anthrax of the hack gharri horses in Bangalore, whilst the Government horses suffered so severely from that disease in the same station.

The Committee say that the hack gharry horses, from their regular work and short feed, have at no time any excess of nitrogenous matter in the blood; in fact the supply is barely sufficient to replace the expenditure caused by the work exacted from them; the blood is therefore never in that state described by Dr. Carpenter as an "appropriate pabulum" for the reception of zymotic poisons. There is never any great waste of tissue, for the horses are generally lean, and have but little or no superfluous tissue. Mr. Abraham informed the Committee that the large number of horses which he keeps for hack purposes have *never at any time been affected with anthrax*, but that he had lost a fine pair of walers in his own stable. He attributed the loss of his private horses to the fact of their *having been pampered*. Mr. Abraham was probably unaware of the reason, but his explanation is very possibly correct. If we take the term "pampered" to mean over-fed and under-worked, we have at once a reason for the horses being in that condition of blood in which it would contain an excess of nitrogenous matter, rendering them, as shown above, more liable to the infection of anthrax poison. From this inference we may learn much, and I think that by modification of our system of feeding and exercising our troop horses, we may be enabled, by keeping them in a purer state of blood, to lessen the mortality from anthrax. It is not, however, only the special disease, anthrax, to which horses are rendered more liable by errors in feeding, &c.; there is also the troublesome disease of the skin to which horses in India are liable, and which I have long since considered to be a dietetic disease rather than due to climatic causes, also the frequent abdominal diseases and disorder of the liver. The number of these cases may, I am of opinion, be reduced to a minimum by careful attention to the *individual* diet of the horses. In order to carry out this individual treatment, there are many considerations in different cases. A young horse will require more nutrition to develop and strengthen him than a fully grown and matured animal. A horse in reduced condition from hardship or short feed requires to be carefully fed up till he has regained his condition, and will therefore require more nutrition than is necessary to keep up the equilibrium of waste and supply. In regulating the feed of horses which, we will presume, start on equal terms, as to condition, health, &c., it is necessary to enquire into their individual temperament, for what would be sufficient for one horse might perhaps be almost starvation for another, doing almost exactly the same work. The one being of a phlegmatic temperament, although he does all that is required of him, he does no more, and will sometimes come home, after a long morning, shewing little signs of fatigue, whilst his fellow may be a horse of a highly nervous disposition, which frets from the time his harness is put on; and often when the regiment, or battery, moves off, he is in a state of perspiration, and if in draught, he is over eager, taking more than his fair share of work, and in spite of careful handling will return much exhausted. Here we have an instance of two horses, under identical conditions, that require a totally different system of feeding, yet they both get the regulation allowance of grain and forage, which may be more than is required for one and insufficient for the other. The irritable nervous

horse is often a ravenous feeder with a delicate digestion, and is sometimes affected with what may be termed nervous diarrhoea. This horse probably does not require any increase to his grain ration, but would be benefited by an increase to his forage, good hay being preferable. In case of the phlegmatic good goer, if he keeps good condition, and carries a healthy coat, and his excretions are healthy, I would not decrease his grain ration as long as he was at work. Without going scientifically into the chemistry of food, I would remark that it is chiefly on the grain ration that we depend for the supply of the nitrogenous elements of nutrition. All food-grains differ in the quantity and proportion of the elements of nutrition, and their relative value is estimated accordingly. The most general food-grain for horses in India are *chenna* (Bengal gram) and *cooltee* (Madras gram). These grains differ but little in their dietetic qualities. We may therefore in this paper speak generally of the grain ration without reference to the nature of the grain used.

In endeavouring to reduce the regulation of the feed and exercise of horses to a method, it will be well to divide the work exacted from the horses into classes, and I think the following three classes will be sufficient for our purposes :—

1st.—Hard work.

2nd.—Ordinary work.

3rd.—Light work.

Hard work is seldom reached in peace time with Government horses, and in case of the hardship of war the present ration would be found to be barely sufficient. Cab horses in London, which are worked as hard as any horses all the year round, have no fixed ration of oats, but are given an unlimited supply, the owner knowing from experience that the more he can get his horse to consume the more work he will be able to get from him. Here it is to be noted that it is the grain ration that is increased, and not the forage, for a horse eating a full ration of oats will take but little hay or other forage. The condition of "ordinary work" is seldom exceeded with Government horses even during the drill season, and the present ration of 10lbs. of grain per horse per diem, together with the forage, is ample for the majority of horses; but there may be some which, from size or temperament, require either more grain or forage. This may, I think, usually be arranged by giving some from the feed of horses which may be necessarily thrown out of work.

We now come to the condition of "light work." This, with Government horses, is almost one of rest or quiescence during the hot months. It is during this season that especial attention to the feeding of the horses is required. It is not reasonable to suppose that horses under this condition can receive exactly the same amount of nutrition which has been shown to be sufficient for horses in work without ill effects being produced, for the supply is the same and the waste is reduced to a minimum. A large amount of nutritive material is, therefore, at this season taken into the system which cannot be assimilated, and it produces an unhealthy state of the system, rendering the animals more prone

to infectious diseases, and it is at the end of the hot season and commencement of the rains that the troublesome skin disease appears.

Government horses are really, during the hot months in India, "thrown out of work," and acting on the maxim quoted above, "you cannot feed a horse unless you work him," the feed should be reduced and adapted to the altered circumstances. The difficulty here is how to accomplish this and maintain the strength and fitness of the horses. I think that it should be acknowledged that this cannot be done, and the horses should not at this season be called upon to do more than light work. At the approach of the drill season, their feed should be increased and the horses worked up for the more severe work of the drill season. The call for urgent work is seldom so sudden but that there is time to prepare the horses for it.

At the end of the drill season, the regulation allowance of grain may be reduced from 10lbs. to 8lbs., and an equivalent of bran or extra forage given. Bran, sufficient for a large number of horses, is seldom procurable; it is therefore on the forage that we must fall back. During the hot season the grass-cutters' daily grass is at its worst, is small in quantity, and bad in quality, and without any consideration of the reduction of the grain ration itself requires to be supplemented. Some stations are favoured in regard to the forage procurable, for instance at Bangalore, where large quantities of superior hay are grown, which may be purchased at about Rs. 30 per ton. Taking the value of gram at 60lbs. per rupee, this would give to a Battery of R. H. A. an equivalent of about 500lbs. of hay in lieu of the reduction in the grain ration. There are other kinds of forage which may be utilised, as Rumma grass, Ragi straw, and Kurbi or the stalks of *cholum* or *powari*, which however is a coarse feed for horses, and is more suitable for cattle. The same may be said with regard to sugarcane and the rhea grass (*Reana luxurians*) which is too succulent when green, and too coarse when dry for a forage for horses. Some stations have especial advantages: green food may be cultivated regimentally or purchased for the horses; the chief are *lucerne* and *guinea* grass; the former is to be preferred, but the latter, cut when young and given green, acts as an excellent alternative.

The system of the supply of grass to horses by grass-cutters is acknowledged to be bad; it is not only injurious to the general health of the horses, but to it have been attributed outbreaks of anthrax; and the serious outbreak of glanders and farcy at St. Thomas' Mount, although not directly traceable to the grass-cutters' grass, is suspected to have been due to that cause. It is certain that a very large percentage of the abdominal diseases are due either to rank or harsh indigestible and dirty grass. I have gone fully into this subject in a paper on "Colic amongst horses in India," which I contributed to the "Quarterly Veterinary Journal," January 1883.* I also consider that to the long-continued use of green grass a great deal of the skin disease in horses is to be attributed. I have also gone fully into this subject in two papers I contributed to the same Journal.*

* I attach copies of these papers.

In considering the importance of the forage ration, it must always be borne in mind that, although the grain ration is necessary, unless, in addition to this, a full ration of good forage is not supplied, the horses will not keep condition. This is specially true with regard to walers, which before they reach this country are essentially grass-fed animals. With the system of grass-cutters, it is difficult to ensure a due amount of good grass being brought daily; and, although the strictest supervision may be exercised with regard to the grass-supply, it is almost impossible to prevent a large amount of inferior grass being issued. In the hot season it is dry, coarse, and dirty, often wetted, under the pretence of washing, but really to give additional weight to the bundle. This grass should be first dried and afterwards thoroughly beaten on a tressel to remove dirt. In the rainy season the bundles will often contain much rank quickly-grown stuff, and any that has been long gathered will be found to be in a state of fermentation; this should be rejected, and the remainder dried at least for two days before issue, and then all dirt beaten out of it. It will be gathered from the above remarks that I consider that much sickness amongst the troop horses in India is due to the grass as issued, the chief of which are colic and other abdominal diseases, indigestion, diarrhoea, &c., skin disease, and lastly anthrax.

I have already spoken of colic, &c., and skin disease. Outbreaks of anthrax have been attributed to infection conveyed to the horses by means of the grass. It is beyond the scope of this paper to go more fully into the probable sources of the infection of anthrax, but it is necessary here to mention the grass as a probable source, and to endeavour to lessen the chances of infection therefrom. Unless the grass-cutters are more under control, or are provided with preserves, whence they can collect their daily bundles, little can be done. In the anthrax report the majority of cases are shown to occur during the wet months of the year. All rank grass which has the appearance of having been collected on low-lying swampy ground should be rejected, and the grass-cutters should be encouraged at this season to bring grass cut above the ground and not the roots. All grass should be thoroughly dried before being issued. If, however, the infection of anthrax is brought in the grass, under the present system it is impossible not to be running constant risk of infection.

The Anthrax Committee found that, previous to a certain outbreak of anthrax, there had been an unusually large number of cases of colic amongst the horses. These cases may or may not have been connected with the outbreak which followed. When anthrax is prevalent, there are in nearly all instances, *at the same time*, numerous cases of horses being "off feed." I have always considered these cases to be connected with the outbreak; some go so far as to say that these cases are mild types of the disease itself, as in times of cholera amongst men there are usually many cases of simple diarrhoea. By watching horses, symptoms of ill health may early be discovered, and possibly by making some alteration in the stable management serious disease may be averted. One particular lot of horses may be observed to be out of

condition, to have an unusually large number of cases of skin disease, or to have delicate appetites, or to be frequent subjects of diarrhœa or colic. The stable management of this particular troop, sub-division or stable, should be enquired into in every way. The sanitation, grooming and exercising should all be looked to as well as the feeding.

I have not dwelt on the amount of exercise necessary for the maintenance of the health of horses out of work, as this is a matter which must be left to the discretion of those in charge of the horses; but a full hour's exercise at a walk in the morning, and half an hour in the evening, would be sufficient in most cases.

Salt should be given to horses as *an article of diet*, at the rate of half an ounce per horse per diem, two drams in the morning and evening feed, and we should not wait till the horses are out of health, or disease is prevalent in the neighbourhood. Salt is an alterative tonic, and a stimulant to the appetite as well as a vermifuge; it has also a special action on the blood, assisting in the solution and elimination of nitrogenous matter; it may therefore be called "a blood purifier."

In conclusion, we may summarise from the above the following practical conclusions:—

1st.—In order to keep horses in health by the regulation of their food, it is primarily necessary to *treat them individually*.

This I look upon as almost the pith of the whole matter.

2nd.—That their food must be regulated according to the work exacted from them.

3rd.—That the due regulation of the grain and forage ration during the hot months is of the utmost importance.

It is impossible to lay down the amount of grain which may be taken from horses during the hot weather, and what quantity of forage may be substituted. There are so many considerations which must necessarily be left to those in charge of the horses. It is impossible and would not be advisable to keep good horses in condition of racehorses, nor do we wish to see them like the hack gharry horses; but there is a happy medium which should be aimed at, which is perfectly consistent with health. The usual ration of gram for non-working horses at the Remount Dépôt, Oosoor, is 6lbs., and we find that this, with a full ration of forage, is ample; horses not only keep their condition, but improve on it. This ration is increased to 9lbs. as soon as the horse is put to any work. I would, therefore, put 6lbs. of gram as *the minimum* to be given to any horse, and I expect it will be found that in the service, unless there are exceptional advantages with regard to the forage-supply, that few horses will do well on so small a quantity.

The reduction of the grain ration, in the hot months, from 10lbs. to 8lbs., may be taken as the standard, but there may be exceptional cases in which it would not be prudent to reduce even this much, and others from which more might be taken.

I have throughout this paper spoken of the grain ration in lbs. of dry grain, for although 10lbs. of dry *cooltee* becomes about 22lbs. when boiled, it is still but 10lbs. of nutrition. I have endeavoured in this paper to speak in as practical a manner as possible, avoiding

technicalities. I have, however, been obliged, in order to make my reasons plain, lightly to touch on scientific ground. I would refer any one wishing to go more deeply into the subject to an exhaustive and most instructive article on Veterinary Hygiene by V. T. F. Smith now published in the *Quarterly Veterinary Journal*.

REMOUNT DEPOT,
Oossoor,
April, 1885. }

SKIN-DISEASE OF THE HORSE IN INDIA. (1st Paper)

Reprinted from the Q. J. V. S. I., October 1882.

THE most common form of skin-disease in the horse met with in India is that termed by some "Prurigo," by others "Eczema." It is well known to all veterinary surgeons and others in charge of horses in this country. It causes great irritation to the affected horse, loss of hair, corrugation and thickening of the skin. The disease most frequently occurs on the sides of the neck, root of the mane and tail, and in front of the chest; at the same time there is a general unhealthy condition of the coat, and an excessive amount of dandruff is thrown off. The irritation causes the animal to scratch, rub and bite himself on every opportunity, causing a serous exudation, additional thickening of the cuticle and sores on the affected parts.

As there is still a difference of opinion as to the true nature of the affection, I shall in this paper simply use the term "skin-disease," and it will be understood that I allude to the special disease of the horse above described.

Some years ago it was suggested to me that the disease might be due to the presence of a fungus. I then examined microscopically numerous specimens of hair and dandruff from affected horses but failed to detect any trace of fungoid growth; and about two years ago my attention being directed to the subject by an article in the *Veterinary Journal*, I again examined several specimens, but with negative results. From long experience and study of individual cases, I have formed an opinion which probably will not be concurred in by many, and my mode of treatment may not at once commend itself.

I am satisfied that this "skin-disease" is not simply a local affection of the skin itself, but that it is essentially a constitutional disease caused by a morbid condition of the blood, and I am also of opinion that it is a dietetic disease, rather than climatic. Having come to this conclusion, I have sought for some cause in the general feeding of troop-horses in this country, which might tend to cause the morbid condition of the blood and produce skin-disease. In reading various works on disease of the skin, I found that food containing saccharine and starchy matter was recommended to be avoided; on this I came to the conclusion that in the continued and almost entire use of green forage for troop-horses we had a probable source of "skin-disease."

Having had experience in most of the principal stations in the Madras Presidency, I remarked that I had seen more of this "skin-disease" at Kamptee and Bangalore and least at Bellary. Now at Kamptee and Bangalore, during certain seasons, the forage is very green and succulent, whereas at Bellary the rainfall is small, and the supply of green forage very scanty.

Fresh landed walers rarely become affected till the second year after their arrival in this country. Two years ago there was an exceptionally large number of horses affected with "skin-disease" at the Remount Depot, all the cases occurring amongst the horses that had been more than one season at the depot. In that season there was an unusually large amount of green forage issued. Some *Reana luxurians* had also been grown experimentally, and this was cut young and given green mixed with the forage; it was very succulent and sweet and much liked by the horses; it was however discontinued, not being a suitable forage for them.

I took this opportunity to test the result of stopping all green food and putting the affected horses on Hariali hay. I attended particularly to the grooming and to the general health and gave each a sweat twice a week in clothing, carefully drying and rubbing them down directly they came in. I at the same time gave various internal remedies, and used different external applications as recommended by several authorities, and to one, the worst case of all, I gave no medicine. All these cases did remarkably well and went to the service with sleek coats; the case to which I gave no medicine, but depended solely on the dry feeding and diaphoresis, did as well as the others. Since that time I have had several cases and have treated them with success, following the same simple plan of treatment.

If results are looked for in a short time, disappointment and doubt as to the efficacy of the treatment will necessarily follow, as alterations in the system by means of dietetic treatment can only be very gradual, therefore long-continued perseverance with the change of food is necessary.

The improvement is slow, in the majority of cases the skin gradually becomes softer, the hair commences to grow upon the parts that have been devoid of it, and the general appearance of the horse improves, but it may be months before the irritability of the skin subsides.

Prior to trying this plan of treatment I had never heard it recommended, but on my mentioning it to Mr. Western, Veterinary Surgeon to the Body Guard, Madras, he informed me that it was his practice in cases of skin-disease, no matter what other treatment he might adopt, to "stop all green forage," and I find a paragraph in the *Veterinary Journal* for November 1878, in which an answer to a query about a cart mare troubled with irritability of the skin by the Veterinary Editor of the *North British Agriculturist* is quoted; the recommendation here is firstly "to stop all green food."

The Mysore Silladars feed their horses almost entirely on Ragi straw; and skin-disease is almost unknown amongst them; this is remarkable as a regiment is always quartered in Bangalore in which station skin-

disease is very prevalent amongst troop-horses. Again, the horses of the Regiments of Cavalry and Batteries of Artillery of the Hyderabad Contingent are, I believe, fed almost entirely on dry Rumma grass. These horses are remarkably free from skin-disease, at the same time the disease is common amongst the Regiment and Battery horses at Secunderabad, and it is noteworthy that the Hyderabad Contingent horses at Bolaram are picketed in open lines, and the Royal Artillery horses are under cover.

I could quote individual cases to show that the continued use of green succulent forage is in many instances a predisposing cause of skin-disease in the horse in this country. Of course I do not wish it to be understood that all horses fed on green grass necessarily get "skin-disease;" but I am of opinion that some horses have a constitutional tendency to the disease, and that the continued use of green forage acts in these cases as a predisposing cause by producing an alteration in the blood, and I think that the injurious effect is probably due to the saccharine matter contained in the grass, which, by the process of drying or making hay, would be decomposed by fermentation.

With regard to the amount of drying that would be sufficient to counteract the injurious effect of giving solely and continuously green forage to horses liable to skin-disease, (I would prefer of course to give a forage ration entirely of Hariali hay, but this is probably impracticable), I would recommend that the grass-cutters' grass be dried for two or three days before its issue to the horses. I would further advise that the forage ration should at no time, especially during the wet season, consist solely of fresh grass-cutters' grass, but always contain a proportion of Hariali hay or dry Rumma as procurable.

I would here remark that I have in many cases observed that horses affected with skin-disease are also the subjects of brittle feet. This is to be accounted for by the fact of the horn being a dependency of the skin; that structure being itself unhealthy, the secretion of the horn becomes so too. These brittle hoofs may be softened by the application of hoof dressings, yet, as long as the skin-disease exists, there will be no permanent improvement; however, as the state of the skin improves, so will the secretion of the horn become more healthy.

It now only remains for me to speak of local applications to the skin. The Pharmacopœia has been ransacked for remedies. I myself have at various times used almost every conceivable agent with doubtful success. I have of late discarded all oleaginous compounds, as I have come to the conclusion that, whatever may be their therapeutic effect, they act prejudicially, particularly with horses picketed in open lines by collecting dirt and thus mechanically interfering with the healthy action of the skin. It is my practice at first to thoroughly cleanse the parts affected by washing with carbolic acid soap. Subsequently, if there is much irritation present, I apply the cyanide of potassium lotion as recommended by Professor Williams in his treatment for "Prurigo" in page 683 of his work on Veterinary Surgery. As I said before, I give affected horses a sweat twice a week to promote a healthy action of the skin, and I also wash them twice weekly with carbolic acid soap to thoroughly cleanse the

skin from all impurities, and any exudation that may have taken place. Certain special cases may require some modification in the treatment, but I need not go into that, as in this paper I have only wished to speak of skin-disease generally.

SKIN-DISEASE OF THE HORSE IN INDIA (2nd Paper.)

It is now twelve months since I sent a short paper on this subject to the *QUARTERLY JOURNAL*. I then gave it as my opinion that a large proportion of the usual skin-disease amongst horses in this country was attributable to the inordinate use of green food. Since that time I have continued the same simple plan of treatment as described in that paper with uniform success. I came to the conclusion that it was a dietetic rather than climatic disease, and that it was a constitutional rather than a local affection of the skin, and further experience has confirmed me in this opinion.

I am not satisfied as to the mode in which the green grass exercises its injurious effects; it has been suggested to me that it is simply on account of the excess of water in the food, but I am still of opinion that the ill-effect is due to saccharine matter, or rather I should say the condition of the saccharine matter which would become altered in the process of drying or making into hay.

I fear I have failed to make myself understood in some instances; it is not the *occasional* use of green food that is, I think, injurious, but it is the *long continued* use of green grass such as the grass-cutters bring, so that sometimes for months together the horses get little else but green grass. Where horses are continually on dry food, an occasional full ration of green food, doubtless, has a salutary effect by acting as an alterative to the system. I have been told I have not proved that green food is productive of skin-disease. I have however shown that, in the stations in which there is a more abundant supply of green food, there is more skin-disease amongst the horses, and *vice versa*. I have quoted a fact that at the Remount Depôt, where we get but little skin-disease, at a time when an extra amount of green food was issued, there was an unusual number of cases, and with the stoppage of its issue the cases improved.

We have now at the Remount Depôt seven farm horses, which were received from a Battery of R. H. A. which went home from Bangalore. These horses when they were received were almost hairless and in a terrible state of irritation. I have kept them continually on dried grass and hay. I have however dispensed with the occasional sweating, which I considered unnecessary as the horses are in continual work. They now carry sleek coats. I attribute this improvement *entirely* to the effect of dry feeding; it cannot here be said that it is due to better grooming, for it is impossible with our strength of horsekeepers and limited supervision to ensure strict attention to grooming as in a Regiment or Battery.

I have received from private sources the following facts which are illustrative of the beneficial effect of dry feeding on skin-disease in horses. Veterinary Surgeon Going informs me that when he was stationed at Secunderabad in charge of two Batteries of Royal Artillery,

there were about 20 cases of skin-disease amongst the horses in each Battery; he suggested that they should try the effect of dry feeding as recommended by me. The Commanding Officer of one Battery agreed, but the Commanding Officer of the other Battery would make no change, the result was that after six months the Battery that gave the dried grass had but *one bad* case and *three mild* cases, whilst the other Battery, which had continued the green grass, had no less than *twenty-six bad* cases and *nine mild*. This is most remarkable as the horses of the two Batteries were in stables adjacent the one to the other, and were under exactly the same conditions, with the exception of the condition of the grass when issued—in one Battery it being given in a dried state and in the other it was given green as it was brought in by the grass-cutters. This illustrates both sides to the question: firstly, the beneficial effect of dry feeding; secondly, the injurious effect of the green grass, for the number of cases of skin-disease amongst the horses of the Battery which continued the use of green grass absolutely increased, whilst the other Battery which gave their horses dried grass became nearly free from skin-disease.

Veterinary Surgeon J. Mills informs me that he had a pair of ponies; they were in poor condition, but carried good coats; he gave them almost unlimited green *guinea* grass; in a short time one became affected with very irritable skin-disease. This is a case strongly presumptive of the disease having been absolutely caused by green food, and *guinea* grass is very rich in saccharine matter. In my original paper I quoted V. S. Western's opinion on this subject as corroborative of my own. He further added that he owned a horse which was always affected with disease of the skin after getting green food, but improved when put on dried grass or hay.

I would here direct attention to an interesting fact, related by V. S. D. C. Pallin, in the first number of the Quarterly Journal. He informs us that, during the voyage to the Cape, horses which embarked with chronic skin-disease quite recovered; he attributes this to "influence of climate," for he says in his conclusions: "The influence of climate on this disease is well illustrated by the fact that it disappears at sea, and certainly assumes a milder form at Secunderabad than at Bangalore." Now both these facts strongly support my views as to the causation, for at sea the horses could have received nothing but dry food, and at Secunderabad there is far less green food than at Bangalore.

I could multiply these instances in support of my experience, but it would unnecessarily prolong this paper, and I think I have given sufficient evidence to maintain my previously expressed opinion. I have at no time wished dogmatically to lay down that skin-disease amongst horses in India is entirely due to the excessive use of green food. Were it so we might at once classify skin-disease amongst "preventible diseases." That there are other factors in its causation cannot be denied, for, doubtless, exposure, neglect, indigestion, and disorder of the liver, all play a part. I think, however, I have shown beyond doubt that the prolonged use of green food has a most marked effect and that the change to dry food is most beneficial.

As to the exact pathology, I consider that it is "Eczema" in a chronic form. By some it is termed "Prurigo," which I look on as a totally different affection, but one that is frequently met with, especially amongst young ill-conditioned horses.

COLIC AMONGST HORSES IN INDIA.

Reprinted from the Quarterly Journal of Veterinary Science in India, and Army Animal Management, January 1883.

ABDOMINAL diseases are common amongst horses in India, therefore the subject must be one of interest to those in charge of Government horses as well as to private horse-owners. An interchange of views and experience on the subject will be beneficial to those interested in the management of horses in this country. I therefore offer this paper on the subject of "Colic amongst horses in India."

All diseases of the horses causing symptoms of abdominal pain are usually reported as "colic." If "colic" may be taken to mean pain in the abdominal viscera, due to some disturbance of the digestive functions, the term may be accepted, and it is this form of abdominal disease of which I wish to write.

I shall not in this paper follow the usual manner of dividing colic into two classes, spasmodic and flatulent, as, although symptoms shewn may differ and special cases may require some modification in the treatment, I am of opinion that the original cause of each class of colic is similar, but in some instances, owing to the nature of the food for peculiar state of the ingesta, as soon as there is any interruption of the digestive process, fermentation takes place and gas is evolved complicating the disease and rendering the restoration of the digestive functions more difficult.

The ordinary symptoms of abdominal pain shewn by the horse are so well known by all in charge of horses, that it would be superfluous on my part to lengthen this paper by giving a description of them. I will therefore at once proceed to the

CAUSE.—The cause of derangement of the digestive functions may be numerous, but from my experience it is most frequently due to the presence of some irritant in the intestinal canal. The physiological action of irritants in causing colic is of two kinds:—

- 1st.—An ordinary irritation, which increases the peristaltic movements of the intestines, producing laxation of the bowels or perhaps purgation.
- 2nd.—An extraordinary irritant causing arrestation of the peristalsis; I will here quote from Kirke's Physiology, 4th edition, page 268: "Violent or other irritation stops the movement apparently by exhausting the nervous influence and thus paralysing the muscular tissue."

Colic caused by the first (or ordinary) irritation to the bowels, is most frequently met with during the rainy season, when the grass-cutters will bring some harsh unwholesome grass with their bundles, for they can

at this time collect a large quantity of quickly grown stuff with very little labour, and make up their bundles to the specified weight. This grass soon sours and contains a minimum of nutrition. Colic thus produced is usually associated with purgation. In my experience, "colic" is more frequently due to the second cause, that is "violent irritation causing arrestation of the peristaltic movements," and is chiefly caused by coarse and fibrous, or dirty grass, or by the horse himself, from morbid appetite, swallowing quantities of dirt, sand, or gravel.

The coarse, fibrous grass is usually brought by the grass-cutters, during the early rains, when they collect their daily bundles in a short time by following the ploughs, which are then at work breaking up and cleaning the ground. The bundles thus collected are chiefly made up of harsh roots, which have laid in the ground during the hot weather, although, no doubt, in these bundles are some of the true Hariali roots, which, when they have grown, are succulent and nutritious, but taken out of the ground are fibrous and indigestible. And with this grass is a very large proportion of the true fibrous roots, in appearance and texture very like *cuscuta*, from which tatties are made, and I should think containing as little nutritive matter and about equally indigestible. These bundles are often passed as "root grass," it not being always understood that it is not the true "root" that should be required, but that the underground stems or rhizomes of the Hariali alone should be passed as "root grass." At this season of the year, the early rains, cases of colic are very numerous, and nearly all are due to this erroneously called "root grass." I have specimens at present in my possession of large masses of harsh roots which had accumulated in the intestines, and which the intestinal action was unable to pass on.

Another frequent cause of colic in this country is the dirty grass sometimes given to horses, a bundle of grass-cutters' grass weighing say from 30 to 40lbs. often containing as much as from 1 to 2lbs. of dirt, sand, or gravel. Grass-cutters are very properly forbidden to wash their bundles before producing them for inspection. This is right, as there is nothing to prevent them washing them in the most foul pools. However, as the grass, from the manner in which it is gathered, must contain a quantity of dirt, appliances should be at hand for the purpose of cleansing it before its issue. If the grass be dried before being given to the horses, most of the dirt can be beaten or taken out.

Chenna or cooltee should be thoroughly cleansed from all sand or gravel, but from my experience I do not think, if the grain is cleansed with ordinary care, it is with the gram that the large accumulations of sand and gravel that are sometimes found in the intestines, after death, are taken in. I consider that in the majority of cases, the sand and gravel is either taken in with the grass or eaten wholesale by the horse from morbid appetite. I am aware that this opinion is not generally concurred in, and I have known gram, from a feed of which a few grains of sand and gravel have been extracted by means of careful washing, condemned, and at the same time grass

issued that contained quantities of dirt and sand. I admit that it is at all times of the greatest importance that the gram should be free from all impurities, yet I am of opinion that the small amount taken in, in the feed, would be less likely to accumulate in the intestines than that taken in wholesale from morbid appetite or in the quantities I have shewn frequently to be present in the grass-cutters' bundles. With regard to the eating of earth, sand or gravel, from morbid appetite, I think this is of much more frequent occurrence than is usually admitted. In 1877 I sent a communication to the Veterinary Journal (Vol. V, p. 401) giving some of my experiences of sand-eating amongst horses in this country; as it bears upon this subject, I will refer to the remarkable instances I then quoted. A number of fresh walers were purchased in Madras and sent to the Depôt. Owing to the scarcity of straw for bedding (it was during the great famine) these horses had been given sea-sand to lie on. One horse died on his way to the Depôt, and a large quantity of sea-sand was on *post-mortem* examination found in the intestines. Shortly after their arrival several of these horses were admitted into the sick lines, showing symptoms of abdominal pain, at the same time voiding quantities of sand; one horse died and 22lbs. of sand were found in his colon. There were three other horses placed under treatment for sub-acute enteritis, and before leaving the sick lines, they passed respectively $17\frac{1}{2}$, $9\frac{1}{2}$, and $3\frac{3}{4}$ lbs. of sand. The horses of this batch did not thrive, and from amongst them were frequent cases of colic, usually associated with the passing of sand. The sand was doubtless taken in by these ill-conditioned horses from morbid appetite and probably on account of the salt it contained. The cases above quoted may be exceptional, but are instructive, showing as they do the risk attached to the use of sea sand in lieu of bedding. I have also met with cases of horses bedded with river sand, eating it wholesale and dying of enteritis, large quantities of sand being found in the intestines, *post-mortem*. Instances of horses eating the gravel at their pickets and gnawing the walls of their stalls are in the experience of every one.

I now go on to another generally accepted cause, and that is "Water." My experience is that this is seldom a cause of colic in this country, perhaps the reason of which is, that water, as given to horses in this country, is seldom perfectly cold, and is, I think, usually soft.

In this tropical climate, I think that more harm is often caused by not ensuring horses their full supply of water than by their ever getting more than is sufficient. I have had horses sent to the sick lines refusing feed, not being able to detect anything wrong. I have ordered them to be watered, and the feeds to be put on again in half-an-hour. I have then frequently found them eat it.

It is a generally understood maxim that a horse should not be watered when he is "hot." This is correct, if it is understood that a horse should not be taken to the watering trough in a state of perspiration after exertion, but I have heard it laid down that a horse should not be watered till he is dry, the fact being overlooked that, although the coat may not be absolutely dry for some time longer, the

horse has ceased to perspire, the system is already cool, and the horse would be refreshed by water. The time for watering is correctly laid down to be about half-an-hour before feeding. To water horses shortly after feeding is contrary to the laws of the physiological action of the digestive system of the horse, for water taken by the horse will pass through the stomach into the intestines, and if the stomach, at the time of watering, contains food, a portion will be carried on into the intestines in an undigested state; it would then act as an irritant and be a probable source of colic. I am informed that it was formerly the custom in this country to water troop-horses at the end of stable hour, after feed, and that the custom is still carried out in some of the irregular troops in the Native States, and that no ill-effects are observed. This I do not understand, and, in noticing the practice, I would urge the propriety of always watering before feed. There are doubtless other causes of colic. I may mention the following:—

In wet, cold weather, frequent cases of colic occur amongst horses that are exposed; these require but little treatment, rubbing dry, a warm stall, dry bed and blanket, and perhaps a warm drink being often all that is required.

Cribbiters and windsuckers are notoriously the frequent subjects of colic, the cause being indigestion produced by quantities of air being swallowed and inflating the stomach and intestines, weakening their powers, and temporarily paralysing them.

Some horses, especially ill-conditioned weakly animals, are peculiarly subject to attacks of colic, due to want of tone of the digestive system. These horses require to be carefully fed on good food, easy of digestion, and as the horses gain in strength and condition, they become less liable to the attacks.

Habitually ravenous feeders are also frequently the subjects of colic, swallowing their food before it has been properly masticated and prepared for passage into the stomach. Some horses, also, after eating their full ration of grass, will eat their bed straw, loading the stomach and intestines with a quantity of food not easy of digestion, which, acting as an extraordinary irritant, causes arrestation of the digestive functions.

Overfed and under-worked horses are the subjects of colic, more nutriment being taken into the system than can be assimilated. These cases are usually associated with diarrhoea and offensiveness of the fæces passed.

There are no doubt other causes of colic due to constitutional predisposition or errors in stable management, but I think I have said enough to show my opinion as to the general cause of colic in horses in this country.

I have throughout wished to confine my remarks to the subject of colic as defined by me at the commencement of this paper. I therefore do not intend to go into the untoward sequences of colic, such as enteritis, gastritis, rupture of the stomach or intestines, or rupture of the diaphragm, &c. I will therefore close this paper with a few remarks on the general treatment of colic.

TREATMENT.—The routine treatment for colic in vogue at the Remount Depôt I had not seen till I came here. The practice was, I believe, introduced by Mr. James Thacker, who was the first Veterinary Surgeon appointed to this Depôt; its simplicity and success has recommended it to his successors, and it has been continued up to the present time.

When a horse is brought to the sick lines shewing symptoms of abdominal pain, a very copious enema of cold water is administered; the horse is then walked till he has rejected it; he is then placed in a large loose box and well bedded down. Usually, in a short time, the symptoms of pain pass off; if they do not, a second enema is administered. After this, should he continue in pain, the treatment is adapted to the symptoms shewn. It is my practice, should the horse not be relieved after the second enema, to give a laxative dose of linseed oil, with or without the addition of a couple of drachms of aloes according to circumstances.

The success of this mode of treatment is undoubted, and I consider the *modus operandi* is this: The enema first relieves the patient by emptying the rectum of all feces present, and the cold water acts secondarily as a stimulant to the muscular coats of the intestines, restoring the peristaltic action and inducing the removal of the offending material. Should this not be effected by the enema, the laxative acts in the same manner, and the symptoms of colic pass off, of course, long before any effect of laxation of the bowels is perceptible. Should the patient be violent and show any excessive pain I always give sedatives, and if there is flatulency, I add the tincture of assafœtida. The ordinary stimulating colic draught is seldom given, except in protracted cases, as I think this is often unnecessary, and is therefore wasted. Some special cases may require special treatment, but this is briefly the treatment for colic which I adopt. In cases of colic, the cause should always be looked for, both as a guide to any special treatment that may be required and as to measures to be adopted for the prevention of a recurrence of the attacks.

(This paper was written and approved by the Council last year, but mislaid in the Secretary's Office.)

MOUNTED INFANTRY.

By Colonel H. B. HANNA.

"The comparative merits, as regards efficiency as Mounted Riflemen of Dismounted Cavalry and Mounted Infantry, must be held, from present experience, to be much in favor of Mounted Infantry."—*Colonel C. F. Cery.*

A PAPER entitled "Notes on Dismounted Cavalry *v.* Mounted Infantry" has recently been contributed to the Journal of this Society.

The author of these notes shows throughout this paper a strong and unreasonable prejudice to Mounted Infantry, and has quite ignored the important and valuable service Mounted Infantry rendered during the late Afghan War, and in the more recent campaigns in Egypt and the Soudan. The author sums up his notes in the following terms which, I think, clearly show that he has failed to understand the purpose for which Mounted Infantry is raised, its organization, and its functions in the field. He says: "The idea of Mounted Infantry is undoubtedly a taking one, and will probably gather many supporters, but, in the humble opinion of the writer, it is a 'myth' founded on an exaggerated idea of the power of such a force to act as Infantry at all, and a want of appreciation of what Cavalry should, and could do, if properly trained, armed, equipped and clothed."

Now the subject is of such importance, that the assertion that Mounted Infantry is a "myth" should not, I think, be allowed to pass unchallenged, and in this paper I shall endeavour to show for what purpose, and under what circumstances, Mounted Infantry should be raised; and further on I shall enter more fully into the question of its organization, equipment, training, and duties.

In discussing this question we should never lose sight of the fact that Mounted Infantry has been, and always will be, only an adjunct to Infantry, or a supplement to Cavalry; and it therefore follows that Mounted Infantry should, as a rule, be supported by either one branch of the service or the other, more especially when the enemy is known to possess a powerful and well-organized Cavalry. Because it is quite clear that Mounted Infantry could never hope to cope against Infantry single-handed, encumbered, as they must necessarily be, with their ponies, while to attempt to act alone against good Cavalry would be utter madness, and would in all probability end in the Mounted Infantry being either captured, or totally annihilated. The nature of the ground, however, would, in some cases, diminish the risk,—indeed in a close and hilly country the speed and activity of the ponies, and the superior accuracy of the rifle fire, would make Mounted Infantry a very formidable antagonist to Cavalry.

Mounted Infantry should not be raised before hostilities had commenced, or at least were imminent; and, under some circumstances, it might even be deemed advisable to delay its embodiment until a more advanced period of the campaign, when its services might be more needed than in the earlier stages of the war. This was the case in Afghanistan. The Mounted Infantry was not organized and put into the field until after the occupation of Kabul. But, nevertheless, it should I think be embodied as soon as war was declared, for even in

the earlier periods of the war their services would be very valuable, and the additional time gained for training and equipping both officers and men is of such importance that it should decide the question in favor of immediate embodiment.

The nature of the country, the organization and strength of our own forces, and the strength and organization of the enemy's would, of course, in some measure also be a guide as to the propriety of the step. If we were weak in Cavalry, or the enemy were very strong in that arm, no delay should occur in raising the corps.

The question, however, is one of such importance that before quitting it I will give a few examples to show how quickly Mounted Infantry may be organized and put into the field when time presses. Lieut.-Colonel Carrington, C.M.G., tells us that in the expedition to the Diamond Fields in 1875, the men of the 1st Battalion, 24th Regiment, who formed the Mounted Infantry, were mounted the first day after the horses were purchased (most of them unbroken) and were taught and rendered efficient on the line of march. At the annexation of the Transvaal in 1877 the men of the Buffs and 24th Regiment proceeded on the march to Pretoria, about 11 days after the horses (very few of which were broken) were procured.

Colonel Bray states that in the 4th Regiment, 75 horses and men were trained for Mounted Infantry in six weeks.

Again, under many disadvantages during the Mutiny, the present Sir Henry Havelock-Allen trained in a fortnight about 60 men of the 10th Foot. With these men, three troops of the Military train, and 60 men of the Sikh Cavalry he followed up the enemy with remarkable success.

Unquestionably something might be done towards training Mounted Infantry in peace times. The men might be selected, and encouraged to perfect themselves in horsemanship, transport ponies being occasionally placed at the disposal of regiments for this purpose; but it should never be carried to such an extent as at any time to interfere with the men's training as foot soldiers, because, especially in these days of short service, it will take men the best part of their time to efficiently master their dismounted duties, and until they can shoot well, and are otherwise thoroughly trained as Infantry soldiers, they should not be drafted into the mounted branch.

We all know that to prosecute war successfully money must necessarily be spent with a lavish hand, and Mounted Infantry is one of the channels into which it should freely flow. And after all said and done the equipping and mounting of a few hundred men on ponies would be a mere drop in the ocean as compared with the general expenses of a war. Indeed Mounted Infantry is one of the few items of expenditure which would really give a tangible return. In addition to the tactical advantages of such a body in the field, which I shall endeavour to show hereafter, the relief to the Cavalry would be immense, and would undoubtedly largely diminish casualties in horse flesh. Horses, it should be remembered, sometimes cannot be replaced during a campaign for love or money, whereas ponies can nearly always be obtained, and are far more easily broken in and trained. Besides Mounted Infantry could certainly be equipped and mounted for one-third of the expense incurred in mounting and equipping Cavalry.

The duties of Mounted Infantry would be to aid the Infantry both on the line of march and in action, and to relieve the Cavalry horses of many of those harassing duties which would be felt so much less by the hardy ponies of the country.

The ponies for the most part should be purchased in the country, in which the army was operating ; and thus a very useful body of mounted men might be put into the field, at a comparatively small outlay, and at very short notice, for the performance of duties which, although usually undertaken by Cavalry, would be better performed by Mounted Infantry, while a large portion of the Cavalry itself would be set free to carry on its more important and legitimate duties.

I shall now proceed to discuss, in detail, the organization, equipment, training, and duties of Mounted Infantry.

ORGANIZATION.

Each Infantry regiment in the force should contribute fifty picked men, which should include the usual proportion of Non-Commissioned Officers, for the formation of a Mounted Corps. I would not confine this to European regiments only, but draw men too from native regiments embodying the races in separate corps, and calling them "Mounted British Infantry" and "Mounted Native Infantry." Thus, for example, if the first Army Corps recently warned for service in Afghanistan, had been mobilized the Mounted Infantry under this scheme would have consisted of 600 Mounted British Infantry, and 500 Mounted Native Infantry,—a most valuable addition to an Army Corps.

The men should be specially selected for these Corps ; they must be intelligent, light, and active men, good shots, and good riders. All these qualifications cannot be expected in every man, but they should approach as near to this standard of excellence as possible.

The officers should also be selected on the same grounds, and might be drawn from all branches of the service, but as a rule Infantry officers would probably be best fitted for these corps. To every fifty men there should be at least one officer, besides the Commanding Officer and the Staff. A few well trained Sappers would be an invaluable addition to Mounted Infantry, and an Engineer Officer might with advantage be attached to each Corps.

EQUIPMENT.

The equipment should be as light as is compatible with efficiency. No particular change in the ordinary dress of an infantry-man would be necessary, except that for these mounted duties he should be supplied with putties or leg bandages, and short-shanked hunting spurs. A blanket for the horse should be neatly folded, and placed under the saddle ; the man's blanket should be spread over the saddle, and secured with a surcingle ; the great coat should be strapped to the cantle, and waterproof over the wallets ; the saddle, not heavier than 12lbs., should be fitted with saddle bags and holsters ; the former suspended from D's by straps, being removable at pleasure. In one of the holster pockets should be a revolver, and in the other thirty

rounds of ball ammunition for the rifle. The man should carry forty more himself. In one saddle bag should be stowed,—

One Flannel Shirt.

One pair of Flannel Drawers.

One pair of Socks.

One pair of Boots.

In the other one day's cooked rations, and 3lbs. of grain for the pony.

In countries where water was scarce, like Afghanistan, or the Soudan, each pony should carry below the girths a small *chhagal* of prepared kid's skin for holding water. In fact all mounted officers and men of every branch of the service should, under these circumstances, be provided with them. The importance of having a small supply of cool fresh water cannot be over-estimated; indeed, on more than one occasion, it has been the means of saving valuable lives. A pony's *chhagal* should be made to carry two or three quarts, a horse's a gallon, which would respectively weigh about 5, and 9lbs. when full. This additional weight would be more than compensated for by having a supply of good water for man and beast. Water carried in a *chhagal* owing to constant evaporation is always remarkably cool. The hotter, and drier the climate the cooler the water.

Detail of equipment with weights :—

		st.	lb.
The man	10 7
Rifle and Ammunition (70 rounds)	1 4*
Two Blankets	0 7
Great Coat	0 6
Waterproof Sheet	0 3
Saddle, Bridle and Wallets	1 0
Saddle Bags, waterproof-canvas	0 3
Rations for man	0 3
Grain for pony	0 3
Picket rope, &c.	0 2
Miscellaneous small articles	0 4
Total		...	15 0

All Non-Commissioned Officers should be furnished with watches, binoculars and compasses.

This weight compares very favourably with the weight carried by Cavalry which is seldom under 18, and often over 20 stone. Well selected ponies varying from 13-1 to 14 hands should be able to carry the maximum weight 15 stone with ease. Under some circumstances the weight might be greatly reduced; for example, in a raid, blankets, great coat, part of the ammunition, &c., might be left behind.

				lbs	ozs.
* Martini-Henry	9	0
Long Bayonet	1	0
70 rounds of ammunition	7	9½
				17	9½

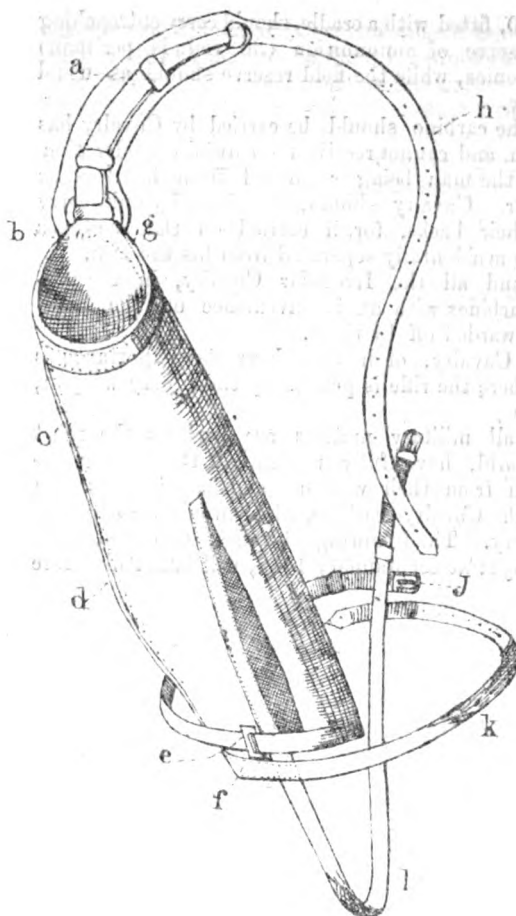
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- a. *Leathern under-lay.*
- b. *Metal ring.*
- c. *The case 15 cm long to.*
- d. *Bulge for lock 27.7 cm.*
- e. *Oblong metal runner for that portion of the waistbelt to which the buckle is attached.*
- f. *Bottom of case 24 cm.*
- g. *Top of case 15 cm.*
- h. *Perforated part of suspensory strap, 80 cm long.*
- j. *Buckling gear of the waistbelt 60 cm long.*
- k. *Perforated portion of the waistbelt 80 cm long.*
- l. *Buckle part of the suspensory strap 80 cm.*

Pouch and shoulder belt may be dispensed with, while the ammunition should be carried in two bags attached to the waist-belt on runners for shifting them from the front to the rear as required.

This equipment is said to be more than a third lighter than the old style used by the Germans.

TRAINING.

In the first place it should be a *sine quâ non* that every man entertained should be a well-trained Infantry soldier, and a fair rider.

As far as Cavalry drill is concerned he should be only taught to increase and diminish the front, take ground to the flanks, and practised in a few simple manœuvres "on the move;" great precision should not be expected, and would not be necessary. He should, however, be constantly practised to dismount, tether his pony, and remount with all practicable speed. Every man should also be accustomed to lead, and to

take charge of three other ponies besides his own. He should be practised at this, both in and out of the saddle. I shall again refer to this matter. He should also be thoroughly instructed in the theory and practice of scouting, patrolling, and picquet duty. A few theoretical lessons, with the daily practice in the field, would in a few weeks make him an efficient mounted Infantry man, for it should not be forgotten that he is already a trained soldier, and consequently his new duties would be soon acquired.

In discussing equipment, and the general efficiency of Mounted Infantry, I must draw the attention of my reader to the very serious disadvantage under which both Mounted Infantry and Cavalry labour when acting on foot, and every endeavour should be made to reduce this evil to a minimum. The evil I refer to is the number of men rendered non-effective, when looking after the spare horses. In practice one man cannot look after more than four, *i.e.*, his own horse and three others, consequently in a body of 400 men 100 are rendered non-effective, when their comrades are acting on foot; but I think the suggestion I am about to make will set a very much larger number free. In every eight men one of the eight should be specially trained to take charge of his own horse, and the seven remaining horses belonging to his comrades, and with the aid of the following simple apparatus he might, I think, successfully do so. For this purpose the man in question should be provided with what I will call a flexible, or jointed ring; 16 feet in circumference; each joint should be 2 feet long, and should be fitted with a hook to receive a corresponding eyelet inserted in the head-piece of the pony. Being jointed the ring would be foldable and very portable. When folded it would only be 2 feet long and about 6 inches in diameter. If constructed of bamboo and shod with iron it would be sufficiently strong, and would by no means be heavy. The man after hooking on his own pony would stand in the centre of the ring, and help to hook on the remaining ponies, as they were brought up to him by their riders, who would then be free to dismount.

The following sketch will illustrate the apparatus:—

FIG. I.—Flexible ring for 8 horses.*

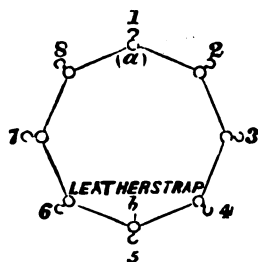
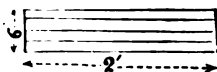


FIG. II.—Ring when folded.



* Flexible rings of this description, the links being 3 feet in length, might be used with advantage in picketing large convoys of camels;—say 60 camels in each circle, which would give a clear interior space of 60 feet diameter, where the baggage might be packed, and escorts offer a stout resistance. The rings should of course in this case may be made of stronger material.

I propose to construct the ring to open at one joint; the opening joint, instead of being like the rest of the joints as in Fig. III, should be constructed in the manner shown in Fig IV.

FIG. III.

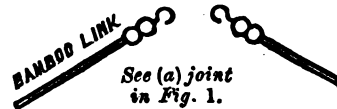
Ordinary joint.



Note.—Hook and links shod with small rings working on a larger ring to be quite flexible.

FIG. IV.

Opening joint (a.)

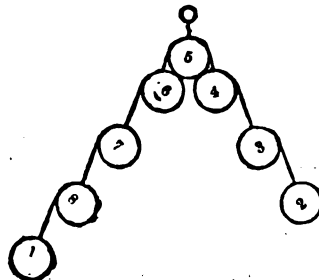


This arrangement would enable the man in charge, without further help, to lead away the eight horses. He would merely have to unhook the link at (a), seize the leather strap at (b), and lead forward the pony attached to it. The other ponies must at once involuntarily fall into their places, and the most vicious animal would, owing to the close packing and the rigidity of the links, be quite incapacitated from doing mischief. No animal could kick, or bite, and must, *nolens volens*, follow the rest.

It may be asked then why the ponies should ever be put into the ring formation. The answer to this question is, that in the ring formation the ponies are more manageable, and as their heads are all turned inwards they are less liable to be startled by what may be going on around them: and again at a pinch the man in charge may be employed in either the defence or offence, as on some occasions it might be even advisable to leave the ponies to themselves, so that every available man might be put into the fighting line.

The following sketch will show the position into which the ponies would fall:—

FIG. V.



MOUNTED INFANTRY.

If the contrivance proved practicable, it would reduce by one-half, only 40 being required for a body of 80 men; we should thus have only a loss of spare animals should never as a rule, be left it should not be less than one-third of the force, *i.e.*, one-third of the force after deducting the ponies; in this case the effective force would be about 90 men. This escort would protect the horses, but, in the event of being outtake to their ponies to secure their safety. On charge of three spare ponies, the unemployed portion of 50 men covering the retreat, either mounted or the nature of the ground, and other circumstances have to be brought up to the main body acting the escort will at once untether them, and take to where required, or if the flexible ring, I propose the ponies would be moved forward, as shown in F

DUTIES.

Mounted Infantry should be under the immediate General commanding the army or division, and be attached to the divisional Cavalry. The duties of it is sometimes several marches in advance of the performed by ordinary Cavalry. The Mounted hamper them than otherwise, especially if the column of our troops were manœuvring against a strong, and Mounted Infantry may sometimes with advantage Cavalry of the division, which is never at any great main body of the army, and is always more or less control of the general officer commanding the division. Infantry should therefore be purely a divisional cavalry Pioneer regiment, and, as a rule, should not be in regiments. The Mounted Infantry might also, and be employed in keeping up communications with the to either flank, or in front and rear. When acting should seize and occupy villages and woods, hold any other obstacles that might be met with on the secure the Cavalry's communications, and enable examine the country beyond the obstacles with impunity.

The occasions when Mounted Infantry may be employed on dismounted service are as follow:—

- (a) In open undulating ground where rapid movement shelter obtained, and cavalry or artillery

* Note here the difference between the Cavalry is attached to a Division. The bulk of the Cavalry is in divisions, which act independently, at least a march in infantry. This is the Divisional Cavalry, whereas the a regiment, which is under the immediate control of the and is the connecting link between the Divisional Cavalry the army, and the main body.

- (b) On ground where the advanced or rear guard can harass or keep in check cavalry or artillery, owing to some obstacle, such as a bridge, ford, &c, intervening, which the enemy cannot cross without delay and exposure.
- (c) On roads and enclosed country where Cavalry is exposed to direct fire in column at long range, prior to attack mounted; or, where, from banks or fences intervening, a flank fire can be brought to bear on an enemy moving on a parallel line.
- (d) In out-buildings, or farm-yards, where an inferior force might keep cavalry in check without danger of being outflanked or surrounded.
- (e) In fortified posts on a line of communications, or in entrenchments, like the Sherepore cantonments near Kabul, where the Cavalry in 1879 aided materially in the defence of the place.
- (f) Where patrols or scouts fall in with opposing detached bodies sent out to reconnoitre.

On all such occasions, if isolated bodies of troops were already engaged, the Mounted Infantry should be speedily pushed forward to reinforce them; and on occasions of this kind they would, unquestionably, be a far better support than Cavalry.

On the other hand, the following general rules should regulate the employment of Mounted Infantry on dismounted service:—

- (a) Mounted Infantry should never be dismounted in any position, where Cavalry have a chance of attacking them before they can remount, and make good their escape.
- (b) They should never dismount in a position where their led horses would be under direct fire.
- (c) The nearer they are to their led horses when dismounted the better, as they can more rapidly rally and mount; their fire will also be more effective, as they can safely allow the enemy to approach within easy range.
- (d) Rapidity of movement is essential in preparing for dismounted service, in order, if possible, to surprise the enemy in close formation, before they can bring a fire to bear in return, or retire under cover, or out of range.

When Mounted Infantry is attached to Infantry on the line of march they should always form part of the advance and rear guards, and should furnish reconnoitres and flankers, patrol and throw out pickets, &c., in a word they should perform the duties usually undertaken by Cavalry, when attached to Infantry. Mounted Infantry may also give escorts to Field and Horse Artillery when the country is very close, and unsuitable for Cavalry, but, when the country is open, Cavalry should be employed. Mounted Infantry under these circumstances would only delay Horse Artillery, and would not be a sufficient protection against the assault of Cavalry.

Mounted Infantry would be invaluable to a force detached to out-flank an enemy, and might also be employed with advantage in a variety of minor duties, such as night patrolling, foraging, raiding, &c., &c. For such duties they are better fitted than

Cavalry or Infantry, especially when the ground was ill-adapted to Cavalry, and the distance to be traversed by the Infantry was considerable. Their speed would leave them nothing to fear from Infantry, and their rifles would be an effectual stopper to Cavalry in an enclosed country. But, perhaps, the most important rôle of Mounted Infantry on active service is their rôle in a general action. Here they should be employed in quickly re-inforcing threatened points, in seizing points of vantage, such as bridges, fords, detached buildings, woods, villages, or commanding ground. When employed in this manner they should at once throw up hasty entrenchments to secure the points thus obtained until reinforcements could reach them. They should also hover on the flanks, and threaten the communications of the enemy, attack his baggage, cut off and make prisoners of detached parties,—in fact perform all the multitudinous and important operations, which might be, unquestionably, undertaken by a branch of the service combining speed with accuracy of fire, under the command of an able and enterprising commander, assisted by good officers, and well selected men. If Mounted Infantry can efficiently perform all the duties I have set forth in this paper, which I have not the smallest doubt in my own mind they can, then I say—and I am sure all my readers will agree with me—that Mounted Infantry would be no “myth” or “phantom,” but a very disagreeable reality to the enemy.

H. B. HANNA.

July 28th, 1885.

A SHORT HISTORY OF MILITARY UNIFORM.

By Colonel F. H. TYRRELL, *Madras Infantry.*

(Continued from p. 163.)

THE Duke of Wellington was an advocate for simplicity of military dress, and hated the constant changes and *outré* fashions introduced by King George the Fourth, whose sole idea and business in life was Tailoring, and who really in sober earnest appeared to be imbued with the fancied "Clothes—Philosophy" of Sartor Resartus. The Iron Duke, who was cold and true as steel, and honest as the day, was too practical to care much for the cut and colour of a garment; and too honourable to condescend to the arts and tricks which men of intellect often stoop to use to dazzle and decoy the vulgar crowd. Napoleon was himself as simple in his own tastes as Wellington, but he knew the effect of glare and glitter on ordinary mortals, and pleased the vanity of his officers and men by pandering to their liking for striking and novel costumes. Though he himself always wore the same uniform, and that one of the plainest in his army, he liked to have his officers and soldiers splendidly attired around him. Quiet and unobtrusive as his own uniform was, he generally wore a plain grey over-coat above it, and it is in this grey top coat with his small cocked hat worn across, white leather knee-breeches and riding boots, that his figure is most generally represented.

Soldiers are commonly supposed to be remarkable for their solicitude about their dress; and indeed this attention to details of dress is looked upon as one of the first obligations of an officer, and any neglect of it is rigorously punished in the lower ranks: yet it is certain that many of the greatest soldiers have been notorious offenders in the way of slovenliness. Napoleon the Great and Wellington, though both affecting plainness of attire, were always carefully dressed: but Charles the XII, Frederick the Great, and Suwarrow were all notorious slovens.

The latter encouraged his men to be dirty and untidy, and ridiculed the foppery of the Germans. Charles the Twelfth always wore the same dress: a plain blue riding coat with white metal buttons, leather breeches and jack-boots. He never took off his boots for months together, and habitually slept in his clothes.

Frederick the Great was equally regardless of appearance. He did take off his rusty jack-boots more frequently than Charles, but he equally neglected to have them cleaned. His usual dress consisted of a three-cornered hat, a blue uniform coat faced with red, and a red waist-coat: the red facings and waist-coat always more or less dirtied by the snuff. These clothes were worn till they were threadbare by the thrifty King, who was a strange compound of greatness and littleness.

One of the most dashing soldiers of the wars of Napoleon was his Cavalry leader, Murat, afterwards King of Naples. He was remarkable for his handsome face and person, and his splendid dress. He wore his hair in long black ringlets like the Cavaliers of Prince Rupert's time, and it was said of him by a contemporary writer that when he was mounted at the head of his troops he looked more like a Paladin of old than a modern horse-soldier. He was fond of dressing himself in the various uniforms of the different Regiments of Cavalry in his division and army, though he had a partiality for the Hussar dress which he had worn as a Private. His presence on parade or on the battlefield, like that of Henry of Navarre, or John Sobieski, was always made known by the height of his snow-white plume. One of the uniforms that became most celebrated during these great wars was the mourning dress of the Black Brunswickers. After his father's defeat and death at Jena, the young Duke of Brunswick dressed his Regiments of Hussars and Jagers in black uniforms trimmed with black, their sable hue being only relieved by silver ornaments representing a skull and cross bones on their chakos and accoutrements. The Duke announced that this dress should never be changed until his father's death was avenged. Before that happened he himself had fallen at Quatre Bras, at the head of his "Death Hussars," as they were called in contrast to the usual title of "Life Guards" of a Prince.

The Duke of Wellington generally dressed in a plain dark blue frock-coat and white neck-cloth, riding breeches and Hessian boots, and a cocked hat worn fore and aft without plume or other adornment. His dress was almost as much multi as uniform, and it was probably largely owing to his example that the wearing of plain clothes became so universally fashionable among the officers of the British Army. Up to the end of the last century officers habitually wore their uniforms, or when they wore a civilian dress it was still of a scarlet color; but after the close of the great wars by the victory of Waterloo, several causes combined to introduce the custom of always wearing plain clothes off duty. Uniform was made so hideously uncomfortable that no one could endure to wear it longer than was absolutely necessary: and the idle army being no longer any profession for a poor man, was officered by wealthy young men who took to soldiering for a few years as a pastime. With these dandified holiday soldiers (Beau Brummel was himself one of them, having commenced his exquisite career in the Tenth Hussars): it was voted "bad form" to be seen anywhere outside of the Barrack Square in uniform, and though the undress uniform was worn commonly for some years more, it gradually also fell into complete disuse except at drill and on duty.

The introduction of "undress uniform" happened about the same time and for much the same reason, as the commencement of the craze for mufti.

In the eighteenth century the distinction between full dress and undress was unknown. One hat and one coat served the officer and soldier on all occasions: all ranks habitually wore their side-arms whenever they went out of doors, and only the omission of the sash,

gorget, or gaiters shewed that the wearer was not for parade or duty. Officers might wear clothes of civilian cut, but they must be of the regulation scarlet colour. But when the wearing of gay-coloured suits by civilians went out of fashion, officers found their scarlet too conspicuous to be fashionable : and uniform became so uncomfortable and expensive under the régime of the Regency that the continual wearing of it became a grievous burden.

An undress uniform was adopted first by the staff, then extended to the Cavalry, and finally to the whole army.

In the staff the undress was a plain cocked hat without feathers or lace, and a blue frock-coat : the Cavalry wore a "forage-cap" copied, of course, from the Germans, a round, flat-topped cap with a lace band, and at first it often had a tassel at the top like a Turkish Fez. Its use was soon extended to the Infantry, who wore, in undress, jackets without lace, and epaulettes or wings without bullion fringe. This undress came to be generally worn on regimental duty and at mess, and was the precursor of the present mess uniform.

Military foppery was never carried to such an extent as immediately after the peace of Paris. The Great Wars and their tremendous conclusion at Leipsic and Waterloo had made all nations crazy about military glory ; and all the kings of Europe were playing at soldiers vieing with each other who should have the best-dressed and best-drilled puppets.

The Great International Military Show at Paris when conquered France was occupied by the hosts of the Allies stimulated this rivalry to the utmost. It was observed there that the English manœuvred over any ground with the greatest freedom and accuracy, though they were deficient in the stiff mechanical precision of the Germans and Russians. The Austrians in their spotless white uniforms, well dusted by their corporal's sticks, were the cleanest outwardly and the dirtiest inwardly.

It is said that when the Allied troops from the Rhine frontier were marching into Paris after its occupation by the armies of Wellington and Blücher, a British band was playing the arriving columns past to their appropriate national airs ; but when the Russians came by, the Bandmaster did not know what tune to salute them with ; but seeing their green coats, he rose equal to the occasion, and ordered the musicians to strike up "Green grow the rushes oh !"

Soon after the long peace was inaugurated by the dethronement and exile of Napoleon, great changes were introduced into the dress of the British army, under the auspices of the Prince Regent, afterwards George the Fourth, and it was made more showy, more costly, and less serviceable.

The Cuirass and the Lance were both introduced into the army. The Life Guards and Blues were equipped with the former, and five regiments of Light Dragoons, *viz.*, the Ninth, Twelfth, Sixteenth, Seventeenth, and Nineteenth were made into Lancers. The coloured square lance caps and broad breast-facings were given to them, and they wore what were then called "Cossack trowsers," but which a later age irreverently named "peg-tops." One of the officers attired in the new dress waited on

H. R. H. the Prince Regent for his inspection: the Prince had a tailor in attendance who snipped off the cloth wherever the officer's jacket shewed a wrinkle, and then fine-drew the edges of the cut; and George desired that the uniform jackets of all the Lancer Regiments might be made to that pattern. Even in the Peninsula the fashion of tight clothes had been followed to such an extent that the troopers of some of the regiments had difficulty in wielding their sabres; but it still gained ground and prevailed in the army to a most absurd extent. Stories used to be told of the officers of crack Cavalry Regiments having themselves sewn up in their pantaloons before a Review; and the slashed cuff of the sleeve had always to be unbuttoned before an officer could get his hand through it.

The Eighteenth Hussars and the Nineteenth Lancers, both afterwards disbanded in a fit of economy, were then among the most handsomely dressed regiments in the army. The Eighteenth, who were called "the featherbeds," from the luxurious habits of the dandies who officered the corps, wore busbies of brown fur and light-blue uniforms laced with silver. The Nineteenth Lancers wore dark-blue, with yellow caps and facings. The Fifteenth Hussars were distinguished by scarlet chakos which they wore up to the time of the Crimean War. The Twelfth Lancers were the only corps besides the Royal Horse Guards Blue who wore buff accoutrements instead of pipe-clayed ones.

The Dragoon Guards and Dragoons now wore a crest of black bear-skin on the comb of their helmets: this they retained until 1850, when the present helmet with falling plume was introduced. All the Cavalry (except the Hussars) now wore the large epaulettes with metal crescent and gold or silver bullion tassels: the cost of these was often more than that of the coat or jacket they adorned: the troopers wore metal shoulder scales.

The jackets, sabretaches and shabraques of all the Cavalry Regiments were covered with gold and silver lace: enormous plumes of feathers were worn in the caps of the Lancers and the chakos of the Light Dragoons, which had broad tops a foot in diameter.

The staff wore enormous cocked hats with plumes of red and white feathers that nearly concealed them from view.

The first regiment of Foot Guards had been made a Grenadier Regiment after Waterloo and wore tall black bear-skin caps with a plate in front with the Royal Arms on it, a white feather at the left side of the cap and cords and tassels round it, gold for the officers, white for the rank and file.

The officers wore dark-blue lapels turned back, the Sergeants and rank and file had the breast of the coats barred with white braiding.

The officers' dress had no lack of gold lace about it, but their court dress was still more refulgent, which they wore on levée and gala days only. After the introduction of caps and trowsers into the army, cocked hats and knee-breeches still continued for long to be worn at court; and when they were abandoned finally some addition of extra gold or silver lace and embroidery was made to the ordinary uniform to make it more presentable at court: the court dresses of some of the

regiments were quite different to their ordinary full dress: the Tenth Hussars for instance wore scarlet overalls in their court dress. The officers of the Life Guards and Blues wore cocked-hats in court or levée dress until a very few years ago.

It was at this time the fashion for Bandsmen, Drummers and Trumpeters to be dressed in fantastic dresses. The Bass drummers and Cymbal players of Infantry bands were often Negroes and were generally dressed as Turks in turbans and loose dresses, bedizened with lace. In the Third Foot Guards, now the Scots Guards, the Drummers and Cymbal players in the Band wore crimson chakos with crimson horse-hair plumes, crimson jackets and crimson trowsers, all richly laced with gold. They continued to wear this peculiar dress which might have been copied from that of Poniatowsky's Red Hulans, till within twenty or twenty-five years ago, when it was abolished.

The custom of dressing up Negroes like Turks in the Regimental Bands seems to have begun with the employment of Negro captives taken from the Turks by the Germans in their wars on the Danube. King George the Second was always attended by his Negro pages, the captives who had fallen to his share when he served in the Turkish wars.

The Infantry of the Line all wore the broad-topped chako, with a hackle feather at the top for the officers and a stiff upright horse-hair plume for the men. The Battalion Companies wore this plume two-thirds white, one-third red at the bottom: its shape made it look like a wine glass with a little wine in it. The Light Companies wore green plumes; the Light Infantry Regiments and Rifles wore green tufts or balls instead of plumes. Grenadier Companies and Fusilier Regiments wore fur caps with white side-plumes.

The coatee was now worn with long swallow tails, and the breast was barred with white braid. A stiff collar, about three inches deep, copied from the Germans, and called the Prussian collar, appeared quite sufficient to strangle the wearer without the addition of a black leather stock of the same height worn inside the collar and buckled behind. White woollen shoulder-tabs, or wings in the Grenadiers and Light Infantry, were worn with the coatee. The trowsers were black in winter, white duck in summer. Broad white cross belts fastened at the point of intersection on the breast by a brass breastplate supported the unequal weight of the cartouch-box and bayonet.

The officers still wore gorgets, crimson silk sashes and large gold bullion epaulettes or wings, while their cuffs and collars were stiff with gold lace.

The Artillery and Engineers were dressed in a similar fashion to the line, but their plumes were all white, their coatees had yellow trimmings and yellow-worsted epaulettes, and they had broad red stripes on their blue trowsers.

Troops on parade in this dress with their tall caps and feathers, red coats barred with braiding white as snow, and spotless ducks looked certainly very well; but their smart appearance was gained at the cost of a great deal of time and labour. All the splendid looking white

worsted lace required continual cleaning and pipe-claying; and the dazzling whiteness of the linen trowsers was obtained by the same means at the cost of comfort and cleanliness. Washing was too expensive a luxury, and the white ducks were thickly pipe-clayed and dried in the sun till they could have stood on parade by themselves. They were worn in all the armies of Europe, and were only finally abandoned in England by the Guards at the time of the Crimean War.

The dress of the soldiers was made of very poor material, and their magnificent appearance would not stand a close inspection. The cloth of their coats was of wretched quality and the buttons were of lead or pewter; it was also uncomfortable: the cap was stiff and heavy, the clothes were too tight, and the worsted lace, &c., required such an amount of cleaning and pipe-claying that a soldier's whole time was occupied in trying to keep himself clean.

On the Continent things were no better. The effect of the uniform and imposing appearance of masses of troops was studied, and the comfort and health of the individual soldier ignored. The Grand Duke Constantine of Russia when Viceroy of Poland set thirty-five thousand men moving to see if their coats looked better with eight buttons than with nine. This imperial martinet behaved very much like the eccentric father of the great Frederick. King Frederick William of Prussia, who spent all his time in dressing, drilling, and disciplining his army, but would never go to war for fear of losing any of the men he had been at such pains to choose and to perfect in the practice of their profession. Constantine used to inspect the guards and orderlies himself every morning at Warsaw, and this was the chief business and pleasure of his life. If a button was dull, or a strap away, he used to fall upon the unfortunate Adjutant or Sergeant-Major who had passed over the delinquency, sometimes with the foulest abuse, sometimes with his toes and his cane. His tyranny and brutality drove the whole Polish Army into revolt in 1830, and the mad martinet died in the midst of the troubles he had brought on himself and on the country.

Meantime Muhammad Ali Pasha of Egypt had succeeded in raising an army on the European model and had dressed them in the Moorish dress, of short jacket and petticoat breeches, which was also worn by the Turkish Marine Forces. Instead of the bare legs and slippers of the Moors, he rigged them out in long stockings and ankle boots, and he adopted as the military head-dress the high red woollen cap with a black or blue tassel which was well known as the common head-gear of the once-dreaded Algerine corsairs, generally known as the Fez cap from the place of its original manufacture in Morocco.

Sultan Mahmud in Turkey had long been meditating reforming his own army, and he had raised a small corps organized and drilled like European troops, from among his Bostanjis or Palace Guards. The corps was dressed in scarlet jackets, blue knickerbockers, cloth gaiters, and Fez caps. The Topjis or Gunners were also persuaded to wear turbans, jackets, and breeches of a uniform cut and colour.

After the massacre of the Janissaries in 1827 and the dissolution of the corps, the turban was proscribed, and the whole of the new army

raised by conscription were put into the new dress, but the colour was made dark blue.

Major Keppel, afterwards Earl of Albemarle, who visited the Balkans after the Russo-Turkish war of 1827, describes the Turkish Nizam soldier as going about with his European boots down at heel, regretting his old and ashamed of his new costume. Sultan Mahmud's great idea of army reform was to make his soldiers externally exactly like Europeans, and the knickerbockers were soon exchanged for tight pantaloons, which made the new dress more offensive than ever to the nation. The Sultan even meditated the substitution of a chako for the Fez cap, and he had got so far as to introduce it into wear in a battalion of Marines, when his death in 1840 prevented his scheme being carried out. The Turks have never taken to uniform kindly. Their old taste for stately parade and martial finery seems to have quite died out, and their army is now the most plainly dressed of any in the civilized or semi-civilized world.

Just as Sultan Mahmud was ruining the appearance of his picturesque Delis and Arnauts by buttoning them into short jackets and bracing them in tight pantaloons, the French were turning the Oriental garb into a handsome and serviceable uniform. Their Regiments of Zouaves raised for service in Algiers were dressed in the ordinary costume of the country, as the most comfortable and serviceable that could be worn there. A crimson Fez with blue tassel was bound with a white or green turban to protect the head from the African sun: a loose collarless blue jacket, slashed with yellow arabesques after the native fashion, was worn open in front to shew a waistcoat of similar colour and pattern: a kamarbund was worn below the jacket, and wide red shalwar, or Turkish trowsers, and the costume was terminated by the unoriental addition of white gaiters and European shoes. Afterwards regiments of Native African troops (Turcos) were raised who wore the same uniform, except that their breeches were blue instead of red. The Moorish Cavalry Militia who had served as the police of the country under the Turkish Deys were regimented by the French under their old name of Spahis, and they retained their Arab dress of Burnous and flowing robes—the only improvement in it made by the French being the restriction of the colours to a uniform scarlet and white.

The late Sultan Abdul Aziz Khan made an attempt to introduce the Zouave dress into the Turkish Army, but it was discovered that the alteration would cost something, and all available funds were just then wanted for providing looking glasses to furnish the new palaces, or something equally important. However the loose knickerbockers were re-introduced into the Ottoman Army to the great improvement of the appearance and comfort of the men.

The English in India adopted a contrary policy and tried to transform their Sepoys as much as possible into the semblance of European soldiers: the turban was abolished in the Bengal and Bombay Armies and the chako substituted for it, but it was worn without the leather peak, as the Musalmans and Hindus could not be induced to wear it.

In the Madras Army a furious mutiny had broken out at Vellore in 1806 when an attempt was made to alter the head-dress of the native soldiery ; and this accident probably prevented the chako being introduced into the Coast Army : but the turban was by degrees heightened and covered with black varnish, so that at a distance it presented the appearance of the European head-dress, but it still retained its domed crown with the curiously shaped crest at the top. In the Bengal Army, which was always better dressed than the others, the long-tailed coat was also worn, but the Infantry Sepoys of the other two armies retained the jacket with short tails which were called "Light Infantry skirts," up to the time of the Great Mutiny.

All the Sepoys wore long trowsers of white linen or black cloth according to the season, instead of the short drawers which they had hitherto worn : boots were worn in the Bengal and Bombay Armies, but the Madras Sepoys retained their sandals till the year 1860.

Four Battalions of Madras Infantry were made into Light Infantry in 1812.

They were given black accoutrements instead of white, and carried powder horns slung with green cords and tassels as was the fashion for Rifle Corps in those days. The Officers wore black patent leather pouch-belts and pouches with gilt breast-plates, chains, and whistles, and sling waist-belts instead of the shoulder belts worn by Officers of the Line, and they had black braid stripes on their trowsers like Rifles.

The Indian Light Cavalry wore light-blue jackets braided with silver like Hussars, and sky blue overalls, and they had dark blue shabraques. The British Officers wore black leather Roman helmets with silver ornaments and crests, and a tail of red horse hair hanging down the back. The Company's European Horse Artillery had similar helmets, mounted with gilt metal. In Bengal and Bombay some of the Cavalry Regiments were made into Lancers and wore the Lancer uniform, but the eight regiments of Madras Cavalry all remained Light Dragoons. Later on the helmet was abolished in the Cavalry and chakos were worn like those of the English Light Dragoons with plumes of white swan's feathers. The Company's Horse Artillery however retained their handsome helmet with its sweeping red tail until their amalgamation with the Royal Artillery.

The English Officers of the Irregular Cavalry also wore helmets with the native "alkhalik," or long coat adorned with gold or silver embroidery, and the breeches and boots which had been laid aside in the regular Cavalry. The Native Officers and Troopers all wore a uniform Native dress and turban, and were armed with Indian weapons, bamboo lances and scimitars. The first-raised regiment, Skinner's Horse, wore yellow coats and red turbans : other regiments wore either scarlet, blue, or green uniforms. The famous Scinde Horse, raised by General Jacob, wore dark green uniforms and their Officers had silver helmets.

The British troops in India at first paraded, marched, and fought in exactly the same dress as they wore in Europe. Cocked hats and

chakos were worn on parade as late as 1860. Gradually more sensible customs prevailed : white clothing was sanctioned for wear in the hot weather, and forage caps were worn with white linen covers and curtains to shade the back of the head and neck from the rays of the sun.

The French were the first European nation to inaugurate a reform in military costume. Under Louis the Eighteenth and Charles the Twelfth the uniform of the French Army remained much the same as it had been under the Empire. Their Garde du Corps and Swiss Regiments wore scarlet, their French Guards dark blue coatees barred with white braiding, and the bearskin cap with its front plate and cords and tassels and white side-plume. Their Algerian wars first seemed to have opened the eyes of the French to the discomfort of campaigning in heavy chakos and tight coatees ; and they made the former lighter by reversing its shape and making it like an inverted flower-pot. They also substituted a frock coat for the coatee : their coats and trowsers were made looser and provided with pockets. The smart little kepi replaced the old flat-topped forage-cap. They still, however, retained their worsted epaulettes, by which their various descriptions of troops were distinguished : the Grenadiers wearing red epaulettes, the Light Infantry green, and the Battalion Companies yellow. White linen trowsers were abolished in the French Army and the red trowsers introduced which they have ever since worn. The Prussians were the next to abandon the chako and coatee, substituting the famous "Pickelhaube" or spiked helmet for the one, and a tunic for the other. They also laid aside the epaulette. The Russians copied the Prussians and introduced the leathern helmet into their army about the year 1840. It was made of solid leather, ornamented with a brass eagle in front and a brass spike on the top. The Russian Guards wore a white horse-hair plume in their helmets and the Grenadier Regiments a black plume. The Light Infantry Regiments wore a knob instead of a spike.

In the English Army, after the death of King George the Fourth, several alterations were introduced. All the regiments of household troops were given bearskin caps, which had previously been worn by the Grenadiers only. The Life Guards and Blues wore bearskins at the Coronation of Queen Victoria, but the big fur caps were soon pronounced unsuitable for Cavalry, and the handsome steel helmets which are still worn by the Household Cavalry were introduced, with a falling plume of horse-hair, white for the Life Guards Regiments, scarlet for the Blues. The same pattern of helmet was introduced for all the Dragoon Regiments about the year 1850, the heavy bearskin crests being done away with, and the falling plumes, as at present worn, substituted. The Dragoon Guards wore brass helmets, the Royal Dragoons and Inniskillings helmets of white metal. The Scots Greys alone continued to wear the bearskin caps.

The late Prince Consort, like most German Princes, imagined himself an authority on matters of military costume ; and set himself to work to introduce innovations into the dress of the army. He first dressed

his own Regiment of Hussars, the Eleventh, in the crimson or cherry-coloured overalls which they have ever since worn instead of the dark blue worn by the rest of the Cavalry. He next set himself to work to invent a new head-dress for the Infantry instead of the top heavy chako, and he produced a cap which was certainly the most frightful military head-gear ever devised by mortal ingenuity. It was of black felt of the shape of an inverted flower-pot, with a peak running all round it. It had a pompon or tuft on the top, and brass cross in front. This Albert chako excited so much ridicule, and was so universally unpopular, that the Prince reluctantly abandoned it, and a compromise was effected. A narrow topped chako with a leather peak before and behind, like that just then introduced into the German Jagers, was substituted for it, and was worn by the British Infantry for the next twenty years; the name of the Albert hat being generally given to it. In the caricatures of the time and in the cartoons of *Punch*, Prince Albert was long represented as always wearing the extinguisher-shaped hat of his own invention. The tuft or ball which had till then been only worn by Light Infantry Regiments, was now adopted instead of the feather for the whole army, the colour being the same as those of the feathers. The Forty-sixth Regiment of Foot alone wore a scarlet tuft. The Artillery and Engineers continued to wear the plumes. The curious fur-crested cap worn by the Horse Artillery was abolished, and they were given instead caps like the Hussars, which now began to be known by the name of "Busby." The origin of this word we have been unable to trace.

The Grenadier caps worn by the Fusilier Regiments and Grenadier Companies were abolished, and all the Infantry wore the new pattern chako. The Officers of Rifle Corps had, under George the Fourth's reign, been dressed like Hussars on foot, with large plumes of cock's feathers in their chakos, dolmans trimmed with black fur and black braid, and jackets similarly braided. Their dress was now changed to a plainer one, more like the rest of the Infantry; they continued however to wear their Hussar finery as a court or levée dress until the time of the Crimean War.

The Sixth Dragoon Carabiniers were in 1852 changed into Light Cavalry and were given blue uniforms instead of the scarlet faced with white which they had hitherto worn. The wags of the day said that it was under cloak of proceeding to the Cape to take part in the Kaffir war that they had been turned into Light Cavalry at a heavy expense.

The gallant and execrated soldiery who fusiladed citizens and flogged women in Lombardy and Hungary in 1848-49 continued to wear under Radetzky and Haynau the same uniform in which they had fought at Leipsic, and garrisoned Paris in 1814. The low-crowned, broad topped chako and the white coat with facings and pantaloons of cherry colour or mazarine blue were still worn by the "Kaiserlichs," the Officers so far conformed to modern fashion as to wear trowsers: but the rank and file of the Infantry were still dressed in tight pantaloons and short black gaiters. But after the accession of the Emperor Francis Joseph the coat was changed to a tunic without epaulettes or shoulder knots, and the pantaloons and gaiters were replaced by trowsers. The

chako was altered to the shape worn by the French, narrow at the top and sloping at the back. The forage-cap was made in a similar fashion, with a peak coming close down over the forehead.

The Emperor of Austria's Life Guards wore scarlet tunics laced with gold all the way down the front to the hem of the skirt in front; they had plumed helmets like our Life Guards, and white leather breeches and jack-boots. They still wear the same dress.

The Cuirassiers wore white tunics with black helmets and breastplates of iron: no backplates. The men were mostly Lombards and Germans, the different arms of the service in the Austrian Army being supplied by different nationalities according to the class regiment system. Thus the Lancers were Poles from Galicia, the Hussars were all Hungarians, the Riflemen all Tyrolese. The Hulans, (as they are called by the Austrians, Uhlans by the Prussians and Russians), wore the usual lancer uniform of a dark green colour: most of the Hussar Regiments also wore dark green, but there were regiments dressed in various colors. The "Banderia" or Hungarian Yeomanry Regiments were remarkable for their rich, brilliant and tasteful dress: all of them were, of course, Hussars. One regiment wore blue caps with white swan's plumes, white tunics with light blue pelisses trimmed with white fur and silver lace, and light blue pantaloons with silver lace stripes. Another corps wore purple and yellow laced with silver; another dark-green and crimson laced with gold, and so on; the young noblemen and gentlemen who served as volunteers in the corps all being anxious to make as brave a show as possible.

The staff of the Austrian Army wore a gray or light blue uniform in undress, instead of white, and the Artillery were dressed in brown uniforms with red facings, and wore round hats looped up at one side; these had lasted ever since the commencement of the century in this most conservative of armies. The frontier Regiments or Borderers who formed a permanent guard on the South-eastern Military Frontiers to prevent the incursions of Turkish bands, wore also brown uniforms. They were almost entirely composed of Slaves, and were hated worse than the Germans by both the Italians and Hungarians. The Yagers of the Austrian Army were all Tyrolese, and wore a uniform modelled on their national dress: a high crowned hat with a bunch of cock's feathers at one side and the brim looped up on both sides; a grey tunic with green facings, and grey trowsers. The accoutrements were black, and made like the ordinary equipments of a chamois-hunter, and a steel loading rod was suspended from the belt. The improvement in military firearms has now done away with most of the sporting equipment of these Tyrolese Yagers, but they still retain their distinctive uniform.

Most of the petty states of Italy dressed their soldiery in imitation of the Austrians, but blue was the colour most affected by them instead of the showy but unserviceable white. The troops of Savoy were dressed in dark blue with grey trowsers: the Dragoons who formed the gendarmerie of the Papal States were dressed in dark green uniforms: the Pope's Swiss Guards were dressed as Mediaeval Halberdiers in parti-coloured doublet and hose, and their officers wore steel morions

and corslets of antique pattern. The Guardia Nobile (Noble Guard) which formed the bodyguard of His Holiness wore a scarlet Dragoon uniform with yellow metal helmet with crest and horse hair-tail, white breeches and jack-boots.

Louis Philippe raised a Brigade of Chasseurs in the French Army who wore green facings, plumes and trimmings. They first became famous as the Chasseurs de Vincennes, from the place where they were raised, then as the Chasseurs d'Orleans, and they afterwards became the Chasseurs Imperiales under Louis Napoleon. Some of the battalions which were then quartered in Paris distinguished themselves by their zeal in the cause of the Prince-President during the *coup d'état* of December, and they were always great favourites of the Emperor's.

Napoleon the Third tried as far as possible to restore the glorious traditions of his great uncle's reign to the army. He gave the regiments Eagles again as their standards. He raised an Imperial Guard on the model of the old one. Its cavalry comprised Cuirassiers, Dragoons, Lancers, and Hussars: also a Corps of Guides dressed in black fur caps, green jackets laced with gold like Hussars, and crimson overalls. He also had a bodyguard called the "Cent Gardes" picked from the tallest men in the army. There was only one squadron, a hundred strong; but it is said that great difficulty was found in procuring Frenchmen tall enough for the Corps. They wore yellow metal helmets with high comb, a white hackle feather in the side, and a scarlet horse-hair tail: they had light blue tunics, yellow metal cuirasses, white gauntlet gloves, leather breeches and jack-boots. The Cuirassiers wore scarlet side-plumes in their steel helmets and black horse-hair tails. They wore crimson overalls booted with leather, a practice which now became the fashion for all the French Cavalry, and the same fashion was for a time introduced into our own and into other European armies. The Dragoons wore brass helmets similar to those of the Cuirassiers, green coats with white plastrons, crimson facings, epaulettes and overalls. There were Regiments of Lancers dressed in red, in blue, and in white: the latter with light blue facings was the uniform of the Lancer Regiment that bore the name of the Empress. The French Lancers had tricoloured pennons on their spears: those of the Austrian Uhlans were black and yellow, of the Prussian Uhlans black and white, and of the Russians blue and white; the Cossacks had no pennons: the colour of our lance flags has always been red and white.

The French Hussars wore a tall narrow-topped chako with a falling plume of horse-hair. The different regiments wore uniform of different colours: red was a favourite French Hussar uniform.

The Regiments of French Horse raised for service in Africa, and called Chasseurs d'Afrique, wore scarlet kepis, light blue jackets, and red overalls. They were all mounted upon barbs.

The Spahis or Native Moorish Cavalry continued to wear their native dress; the French Officers of the Corps wore the same dress as the Chasseurs d'Afrique, and the Officers of Zouave and Turcos Regiments also wore the European Infantry uniform: in the same way the English

Officers of our West Indian Regiments, in which the rank and file wear an Oriental dress, are dressed like Officers of the Line.

The French Artillery were dressed in dark blue, with a falling plume of red horse-hair in the chako, and red facings, epaulettes and aiguillettes : and with broad red stripes on their dark blue overalls.

Napoleon the Third made the frock which had replaced the coates under Louis Philippe into a tunic by shortening the skirts ; and he gave the whole of the Infantry the loose Zouave trousers, which were always worn tucked into leggings or "jambieres." White gaiters were worn over the leggings and shoes. This dress had the appearance of being very comfortable and serviceable, but the men used to complain of the leggings, which were made of stiff leather, and worn as they were on the men's bare legs, used to gall them in walking ; and the number of separate articles of wear, trousers, leggings, gaiters and shoes which had to be put on, made the men slow in turning out, whereas the German and Russian soldiers had to put on only trowser and boots, the former being worn tucked inside the latter on service and on the march.

The latter fashion, it may be observed, prevails in most of the armies of Northern European countries, where cold and wet are the evils most to be guarded against ; while in Southern lands, where heat and dust give more trouble, shoes and gaiters are most usually adopted for foot soldiers. In our own army the men wear ankle-boots, and leggings only in wet and muddy weather.

The epaulettes of worsted fringe continued generally to be worn throughout the French army : in the infantry the Grenadiers wore red facings and epaulettes, the Battalion Companies yellow, and Light Companies and Chasseur Battalions, green. Blue and green seem a strange combination of colours, but the French Chasseurs, with their plumes of dark green cock's feathers, dark blue tunics and knickerbockers, and bright green facings and epaulettes, trimmings of yellow cord, and gaiters of spotless white, looked remarkably well. All the infantry wore a neat black leather chako with a brass eagle in front and a tricoloured "pompon" at the top.

The Pioneers of all Infantry Regiments wore bearskin caps and large white leather aprons, and they were allowed to grow their beards long. Generally in the army the whiskers were shaved, and only the moustache and small pointed beard, called the Imperial after the author of the fashion, were worn.

The Drum-Majors of Infantry Regiments also wore enormous bearskin caps with a large *panache* of tricoloured ostrich plumes on the top, which made the whole stature of the wearer nine feet high.

The Infantry of the Imperial Guard comprised Grenadiers, Voltigeurs, Chasseurs, and Zouaves. The Grenadiers were dressed in exact imitation of the famous *Vielle Garde* of Napoleon the Great. They even had the old swallow-tailed coatee. The Voltigeurs also wore coatees and had a handsomely ornamented chako with a yellow plume. Both these Corps wore dark blue trousers, instead of the red knickerbockers worn by the rest of the Infantry.

The Gendarmerie who performed the Police duty of the country, and were all reserve soldiers specially selected for their good physique and character, also continued to wear the old coatee; they had dark blue coats with white epaulettes and aiguillettes and large cocked hats worn across, trimmed with white braid and tricoloured cockades. The Cavalry wore white breeches and jack-boots, the Infantry grey trousers with broad scarlet stripes. An Indian Rajah going home on the grand tour, on seeing a Gendarme on duty at the French Frontier Railway Station, made him a profound salaam, and observed to his fellow travellers: "There is a General Sahib on the platform!" and truly these Gendarmes were as fine looking and well dressed men as any in the French Army.

Throughout the service, the Officers of General and Field rank wore gold lace and epaulettes: the company officers, silver.

A Captain wore two epaulettes; a Lieutenant or a Sous-Lieutenant but one, and that one for distinction's sake on a different shoulder for each rank. The gorget was still worn, and showed that its wearer was orderly officer.

The Staff wore cocked hats like those worn by gentlemen in Court dress, with a trimming of white swansdown along the edges; dark blue uniforms laced with gold, and red trousers.

The above was the uniform worn by our French Allies in the Campaign of the Crimea. The looseness of their clothes, lowness of their collars, and lightness of their head-gear contrasted very favourably with the tight dress of the English soldiery and their strangling stocks and cramping cross-belts.

The Russian Infantry who were there as our opponents were then dressed in dark green coats with short tails, and with red or yellow facings and shoulder straps. The officers only wore epaulettes. They wore trousers of the same material in the winter, white duck trousers in summer. On the march and in the field their trousers were always tucked inside their long boots. The head dress was a black leather helmet with a metal spike, and the badge of the double-headed eagle in front. The accoutrements were a shoulder and waist belt of black leather, but the green coat was worn only on full dress parades, and great occasions: ordinarily the Russian linesman was clad in a great coat of coarse grey cloth, in which the badges and devices of corps and of rank were undistinguishable. The conspicuous dress of our own and of the French Officers was believed to cause disproportionate loss to the higher grades in our armies during the Crimean War, while the Russian Officers, dressed like their men in flat forage-caps and grey great coats, were undistinguishable among them.

The Russian Dragoons were dressed in green, much like the Infantry, with horse-hair plumes in their helmets. The regiments of Uhlans (Lancers) and Hussars were dressed after the fashion of the troops in other countries.

The Cossacks (Kazaks, Turkish for free-booters,) wore their national dress of high cylindrical cap without peak or plume or ornament of any kind, long-skirted coat and loose trousers tucked into long boots. The

cap was in some corps of fur or lambskin, in others of leather. The colour of the uniform was generally dark blue; but in the field the grey overcoat was worn. The Cossack lances had no pennons, but the staves were painted red or black.

The troops of the Russian Imperial Guard who were always cantoned in and about St. Petersburg and the vicinity of the Imperial residences were as handsomely dressed as any troops in Europe.

The Chevalier Guards and Cuirassiers of the Guard wore helmets and cuirasses of burnished copper, which shone like gold, with an eagle with outstretched wings for a crest. They wore white tunics with red or blue facings, white leather breeches and long jack-boots coming up to the thigh: on dismounted duties they wore blue overalls with red stripe. They had different uniforms for different occasions: the officers of the Chevalier Guards for instance wore scarlet as a ball dress.

The troopers carried lances with pennons, the staves of which were painted red or blue.

The Dragoon Grenadiers of the Guard wore dark green uniforms with crimson facings. They had brass helmets with a bearskin crest crossing the crown from ear to ear. They had cross belts and carried a long carbine, and a bayonet and Cavalry sabre in one sheath. They were trained to act both as Cavalry and Infantry.

The Lancers of the Guard wore bright blue uniforms, with scarlet lance-caps and facings and white plastrons: Marie Alexandrovna, the daughter of the Emperor Alexander the Second, who married the Duke of Edinburgh, was Honorary Colonel of this Regiment and used to wear its uniform, as is the custom for foreign Princesses, who wear the complete military dress, only substituting a riding skirt for the overalls.

The Hussars of the Guard wore black fur busbies with white plume, scarlet jacket and pelisse laced with gold, white leather pantaloons and Hessian boots.

The Cossacks of the Guard wore leather chakos without peak, plume or ornament; long red kaftans, or alkhaliks as we should call them in India, and blue trowsers tucked into high boots.

There were, and still are, squadrons of Circassian and Tartar Cavalry in the Russian Imperial Guard who wear their handsome national dress of a uniform colour and pattern.

In the Infantry, there was a Company of Palace Guards composed of veteran soldiers specially selected for their character and fine appearance, who continued to wear the bearskin cap, long-tailed coatee and long gaiters of the time of Alexander the First: the Pauloffski Regiment of Grenadiers of the Guard continued to wear the old sugar-loaf cap of the last century. The front of the cap is covered with a thin plate of brass, and it is said that some of the plates having been at different times perforated with bullets in action, the bullet-holes are carefully preserved and reproduced in a new cap when an old one requires replacing. Another extraordinary traveller's tale about this regiment is that no man is enlisted into it unless he has a snub nose: this story

has probably arisen from the fact that the men of the regiment all wear their moustaches brushed up to their eyes : and this peculiarity may at a distance very well give the idea of the whole regiment being pugnosed.

After the death of the Emperor Nicholas his son Alexander the Second introduced the tunic into the army and replaced the Prussian helmet by a chako after the French pattern. He dressed his Light Infantry or Chasseur Battalions in the Russian national costume of a round flat-topped sheepskin bonnet, with a brass cross in front, and a blouse instead of a tunic. The present Emperor has extended this costume to the whole army.

During the Crimean War great changes were introduced into the dress of the British Army. The tunic was adopted instead of the coat or jacket, the Royal Horse Artillery being the only corps in which the latter garment was retained. The tunic was at first made double-breasted like the coat which it replaced, the lapels at the top being turned back to shew the colour of the facings ; but this fashion was soon changed and a single-breasted tunic was worn without epaulettes : the collar was made lower and rounded off in front, and the officers' facings were only trimmed with gold lace instead of being literally covered with it. The sash was now worn across the shoulder, waist belts were introduced instead of shoulder belts, and the white braiding on the breast of the coats of the rank and file of the line was done away with. The grey trousers worn by the Line and the white ducks of the Guards were abolished, and dark blue or black trousers were worn universally throughout the army.

The chako was made lower and lighter : white horse-hair plumes were given to the Fusiliers and dark green plumes to the Light Infantry Regiments. The dress of the Highlanders was improved by substituting a Highland tunic, with basque skirts for the jacket hitherto worn. The Artillery were given a busby with a white plume at the side instead of the chako, and the scarlet cuffs which they had always worn were very sensibly replaced by blue ones which did not show the stains of powder.

The uniform of the Hussars was altered to the pattern worn by the Austrians and Prussians, the hanging pelisse being done away with altogether.

Badges of rank for all officers which had been worn on the epaulette were now worn on the collars.

A blue frock-coat for undress wear was introduced for officers of Infantry. Hitherto these had no undress except the shell-jacket, which was worn on all undress parades. The officers of the East India Company's Army had been better off in this respect, the Infantry officers being provided with blue frock-coats. The Bengal and Bombay officers wore a frock buttoned up to the chin, with gilt metal shoulder scales : in Madras a braided frock-coat was worn with a rolling collar, with white linen collar and black neck-tie. Silk-cord sword belts were worn with these coats like those worn by Turkish officers, crimson cord for the Staff and Departments, black for regimental

officers. The frock-coat introduced into the British Army was ugly and not comfortable, and it was soon superseded by a blue patrol jacket braided with black.

The scarlet serge patrol jacket, as well as the white helmet, was first introduced into the British Army in India. In our campaigns in Scinde and the Punjab under Sir Charles Napier and Lord Gough the British Infantry wore shell-jackets and forage-caps with white quilted cotton covers, and a curtain of the same material hanging down behind to shield the back of the head and the neck from the sun. The Light Dragoons wore white covers on their chakos; white helmets were not worn except by the officers of Native Regiments on the march and this was a matter of regimental arrangement not sanctioned by regulation. Officers used also to provide themselves with "marching coats" of red cotton quilted of patrol jacket shape. As had happened in the Crimean War so in the great Mutiny the stern necessities of campaigning in the hot weather first opened people's eyes to the unsuitableness of the dress of our soldiers and sepoys for their work.

The Bengal Fusiliers marched and fought in their shirt sleeves before Delhi in the early days of the war. The reinforcements that were hurriedly despatched from home arrived in India in tunics and chakos utterly unfitted for campaigning under an Indian sun. After this experience serge frocks and white helmets were generally introduced into our army in India.

At the same time the old Bengal Army had abolished itself by mutinying or disbanding, and the fresh levies which took its place were mostly from the Punjab: and the men flocked to our standard in their native dress of turban and loose blouse and trowsers. After the reorganization of the army the native dress was adhered to: the Cavalry wore it with breeches and jack boots; the Infantry had a short-skirted collarless red tunic with a plastron of the facing colour down the breast, and black knickerbockers with white gaiters. In the hot season the dress was entirely white except the turban. The colour and pattern of the turban, kamarbund, etc., were left to regimental arrangement. In the Bengal Cavalry Regiments to this day the Musalmans, Hindus, Sikhs, etc. wear turbans of different patterns according to their nationality.

The Gurkha Regiments continued to wear the English dress: they were dressed as Riflemen with Kilmarnock forage-caps.

The Bombay and Madras Armies which did not join in the mutiny also continued to wear the European dress. The chako was laid aside by the Bombay sepoys, but they continued to wear the Kilmarnock forage-cap on all occasions.

The "khaki" dress was first introduced into our Indian Army during the Mutinies: Khaki, the colour which the Texans call "clay-bank," is from "Khak," the Persian for earth or clay, and in the Punjab its hue varies from drab to slate-colour. It is a common colour for clothes in the dusty plains of the Punjab, and it was worn by the Punjabi levies who thronged to aid the English in the siege of Delhi in 1857. The other troops before Delhi finding it impossible to keep their white summer clothing clean on service dyed it khaki colour; and for some

years it was universally worn by the British troops in India. But the objections to it were many. It always looked dirty, and especially so immediately after it had been washed. The dyeing required to be continually renewed and was expensive for the soldier; and the dye-stuffs used rotted the linen fabric. Finally it was impossible to tell whether a man was clean or dirty in khaki uniform: the only thing you could be certain of was that he looked dirty.

The dress was abolished in 1861 and white substituted for it as a summer uniform, to the great comfort and satisfaction of all ranks of the army.

In some of the Punjab Regiments drab cloth tunics and trowsers were worn, with red, blue, green or chocolate facings. The Central India Horse wore drab uniforms with maroon facings and gold lace, white leather breeches and jack-boots: the British officers had helmets covered with maroon velvet with gilt spikes and mountings.

The regiments of the Bengal Cavalry were dressed in most various uniforms: some regiments wearing dark blue, others dark-green, scarlet, and even yellow. The men all wore their native dress, the first eight regiments which had been old Bengal Irregular Regiments, still wearing the Hindustani alkhali, the remaining eleven regiments wearing the Afghan blouse.

The Madras Cavalry kept their old colours of light blue with silver lace, but the pattern of their dress was changed to the Afghan model: the seven regiments of Bombay Cavalry were dressed in dark green.

In the Bengal Army the majority of the Infantry were dressed in scarlet, but many regiments wore dark-green, and many were dressed in drab.

In Bombay the Infantry was dressed in red except the Fourth Regiment of Rifles, who wore dark-green, and the Beluchi Regiments which were dressed in dark green with black turbans and accoutrements. Some of them wore scarlet knickerbockers and white gaiters like the French Zouaves.

The Volunteers who came to the front in 1860 to defend the old country with their ready rifles were allowed, like those of 1805, to select their own corps uniforms. Most of the Volunteer Rifle Corps wore grey or drab, and dark-green was also a favorite colour. The Volunteer Artillery and Engineers, however, wore the blue and scarlet of the regular branches of the service. The favorite head-dress of the Volunteers was a Kepi or French chako with a tuft in front. The Victoria Rifles and the City of London Rifle Brigade wore a plume of cock's feathers in front of the chako.

The Honourable Artillery Company dates its existence, we believe, so far back as the time of the Tudors: it had long worn the uniform of a line Battalion, but has lately assumed the fur cap of Grenadiers. It has now a Battery of Horse Artillery and a troop of Light Cavalry added to it dressed in dark blue trimmed with silver. It is the only regiment in Her Majesty's Army which contains within its ranks the three arms of the service: the Punjab Corps of Guides in the Indian Army contains only Cavalry and Infantry.

The uniform of the United States Army has always been of a very plain description, dark blue coats and light grey trousers, with little lace or ornament, and it generally followed the fashions of European uniform at a distance of twenty or thirty years. At the outbreak of the great civil war between the North and South in 1861, the United States regular troops were still wearing broad-topped chakos, swallow-tailed coatees, and cross belts ; while they had shaven upper lips and bright musket-barrels.

The Volunteers who formed the bulk of the armies on both sides adopted the French style of uniform—kepi and frock ; they generally had their trousers tucked inside long boots.

The Federals wore dark-blue : the rank of their officers was only shewn by a badge on the strap on the shoulder which served as a binder for the epaulette (which latter article was never worn.)

The dress of all the troops was of the plainest description, and there was but one pattern for all branches of the service. The officers and soldiers dressed in a way which would be accounted extremely slovenly in European Armies ; the hair was worn long, and the coat, even if it had the full number of buttons available, was seldom buttoned.

The Southerner's soldiers were usually dressed in wide-awake felt-hats or sombreros, and in tunics and trousers of a homespun material which from its colour went by the name of "butter nut." They were even less uniform in their dress than their opponents.

The triumphs of the Prussian arms in 1866 and 1870 over the Austrians and French of course again set all the armies of Europe copying German fashions : for it may generally be observed that the army which temporarily enjoys the highest reputation is looked up to as the leader of military fashions, and sets an example in details of dress, as well as in matters of tactics and discipline.

The spiked helmet had been introduced into the Prussian army about the year 1840 ; and it was very generally adopted by the troops of those minor states in Germany who looked to Prussia for leading. In the war of 1866 in Bohemia, it was seen that the Prussian soldiers preferred marching in their forage-caps and slinging their helmets to their belts on account of their weight and heat : the King, therefore, had the helmet cut down to half its original height, and it now almost fits the skull. It has the Prussian eagle as an ornament in front in brass and brass chin-scales. The peak is cut square across the brow so as not to interfere with the wearer's taking aim : a very sensible fashion which might with advantage be copied in other armies. The helmet is made of leather and is stout enough to defend the head from a sabre cut.

After the assumption by Prussia of the hegemony of Germany and the Proclamation of the Empire, all the several states conformed to the Prussian pattern in all things military : the Bavarian Army, however, still continues to wear its own uniform of bright blue, instead of the dark Prussian blue ; and the Bavarians wear the leathern helmet with a comb and with a crest of fur, like that formerly worn by Heavy Dragoons. The crested helmet is worn by all branches of the Bavarian Army.

The Prussians adopted the fashion which has now become stereotyped in most of the Armies of Europe of having their Infantry all dressed alike, while most various fashions and colours prevail in their Cavalry. The reason for this is not very obvious, but when Field Marshal von Moltke was looking on at a grand review of the Italian troops before the King Victor Emmanuel at Turin, he took objection to the Cavalry Regiments being all uniformed alike, and in accordance with his advice their dress was changed, and they now all wear different facings and trimmings—one regiment white, another yellow, a third red, and so on. In our own army the fashion has been lately introduced of distinguishing Cavalry Regiments not only by the colours of their facings, but also by different colours of plumes, and in the Hussars, of Busby-bags. Formerly all the Busby-bags were scarlet throughout the army.

In our Army the Third Hussars wear scarlet collars, and the Thirteenth Hussars white collars: others than these facings are not worn in Hussar Regiments. In the German Army the whole colour of the Hussar uniform is different in the different regiments: and there are regiments in scarlet, crimson, dark blue, light blue, green and even black: the fashion of the dress is similar to that of the English Hussars which has been modelled upon it. The fur busby worn by the Germans is smaller than ours, and the gold braid on their tunics is neither so rich nor so plentifully laid on as the case with our officers. The German Hussars and Dragoons wear knee boots, while the Cuirassiers and Lancers wear long boots reaching up to the thigh.

The Cuirassiers still wear white, as in Seidlitz's time. The Body Guard of the King of Prussia wear white tunics, steel cuirasses, leather breeches and long boots and helmets of burnished silver, with an eagle with outstretched wings, in dead silver, perched upon the top of the casque as a crest.

The famous Uhlans whom the French supposed to be some wild tribe from the recesses of Pomeranian swamps or Lithuanian forests like the Russian Cossacks are the Lancers of the Prussian Army, Uhlans or Hulan being a Polish word for Lancers. The Uhlans wear dark blue tunics with lance caps, facings and plastrons of divers colours. The lance-flags are the black and white Prussian colours. They are heavy Cavalry, while the Dragoons are light horsemen. The latter are dressed in light blue uniforms, and wear helmets like the Infantry, with plumes.

The Foot Guards have white plumes in their helmets. The Leib Company or Body Guard Company of the First Regiment of Foot Guards still wear the high Grenadier cap of Frederick the Great's time.

All the Infantry wear dark blue tunics, with red facings and dark blue trowsers: in review order in summer white duck trowsers. On the march the trowsers are tucked into their long boots. The men carry their kits in knapsacks made of cow-hide with the hair outside.

The Yager or Sharpshooter Battalions wear chakos, narrow at the top, with peak before and behind.

Numbers of regiments and badges of rank are worn on the shoulder strap of the tunic.

For all ordinary drills and fatigues and for wear in barracks the German soldiers have suits of coarse unbleached linen or canvas, which saves their cloth uniform. Forage-caps are worn with broad flat tops like the cap worn by the British Man-of-wars man. The same cap is worn in the Russian Army. Officers wear leather peaks. In the Staff and Cavalry the colour of the cap is generally white.

The German Officer has only one uniform coat, and cannot, like his English comrade, go to parade, to the promenade, and to dinner in different kinds of uniform. The French or German Officer puts on an epaulette or an aiguillette to his coat for a full dress parade: takes it off when on ordinary duty, and unbuttons his tunic and wears it open with a uniform waistcoat when he goes out to dinner.

The same fashion prevails in most continental armies; and the Officers are consequently saved the expense of keeping up the large kit which an English Officer has to provide for himself, and most of which he leaves behind when proceeding on active service.

Moreover the continental Officers are supplied with the materials for their uniforms from the Government Clothing Agencies, and get them made up regimentally at a small cost. They need keep up a very small outfit of "mufti" either, as they always wear uniform in their garrisons.

A French or German Officer is allowed to be seen abroad in his forage-cap and without his sword in the morning: during visiting hours and at any place of public resort, he must appear in full uniform with his sword.

In India uniform was universally worn by Officers until the influx of new comers from England at the time of the great Mutiny introduced the fashion of wearing plain clothes. Some General Officers, new to the country and disposed to disparage all Indian customs, discouraged the wearing of uniform off duty, and the practice of wearing "mufti" soon became as prevalent in India as in England.

The origin of this word mufti as applied by military men to civilian dress I have not been able to trace. It is originally an Arabic word signifying an expounder of the law and some chance occurrence probably introduced it into our army during some of our campaigns on the shores of the Mediterranean at the beginning of the present century.

The uniform dress of the British Officer had been at its plainest during the great dress reform which followed immediately on the Crimean War, but a revulsion of opinion gradually took place, and the familiar axiom that "fine feathers make fine birds," soon again asserted its just supremacy. A court or levée dress was again worn by Officers of Infantry by the addition of a gold sash and sword belt, with gold lace stripes on their trowsers, to their ordinary full dress, and embroidery on the sleeve of the tunic was added to shew the rank of the wearer. Gold shoulder cords were added to the tunic also, and the badges of rank transferred to them from the collar to leave room for the regimental badges of the territorial regiments on the latter.

In former times regiments had worn gold or silver lace indiscriminately in the British Forces, but latterly gold had been confined to the regular

troops, all Militia and Volunteer Corps being restricted to silver lace. When the Militia were formed into regiments with the Line Battalions of their counties, this distinction was obliterated, and Militia Officers were dressed in all respects like their comrades of the Line: only Officers of Volunteers now wear silver lace, and some Regiments of our Indian Light Cavalry who have continued to use the silver lace and appointments first worn by them in days when there was no such distinction of metal between Regular and Auxiliary Forces.

Several changes were introduced in the head-dress of the army during the years that followed the Crimean and Mutiny Campaigns. Grenadier and Light Companies were abolished and their distinctive dress disappeared.

The Fusilier Regiments were again given the fur Grenadier caps which they had worn in the Peninsula and at Waterloo. The Rifles were given a lambskin busby which suited their dress admirably; but the upright plume stuck in front of it like an Hussar's was certainly a very unfit addition to the dress of a sharp-shooter.

The Royal Marine Artillery wore a very handsome black bearskin busby with a scarlet plume in front, rising from a socket just above the wearer's forehead, the top of the plume being flush with the top of the cap.

Several alterations were made in the infantry chako, which was made of blue cloth instead of black felt, and bedizened with gilt chains and gold braid after the continental fashion. But after the Franco-Prussian war it became simply a question of time when the spiked helmet should replace the chako as the head-dress for the Infantry and a few years afterwards it was introduced. It did not much resemble the pickel-haube, being made of blue cloth with gilt or brass mountings and of dragoon pattern. It does not therefore protect the head so well against wounds or weather as its German original, and the perpendicular peak interferes with the soldiers' aim.

This helmet was introduced for the whole of the Infantry except for the Foot Guard and Highland and Fusilier Regiments and for all the Artillery except the Royal Horse Artillery who continued to wear their busbies. The Highland Light Infantry are now the only Infantry corps who retain the chako: this is on account of the dice-band which they wear on it, which could not well be worn with a helmet.

After the Crimean War when everything French was the rage, the peaks of Officers' forage-caps were made horizontal like the French; but when Sedan and Gravelotte had made us ashamed of our French proclivities, the forage-cap made a return to its original German type.

The distinctive facings of our Infantry Regiments were also abolished, and though the whole Infantry of the army was not given one facing, as in the continental fashion, the colours were reduced to four, *viz.*, blue for the Foot Guards and all Royal Regiments, white for English Regiments, yellow for Scotch Regiments, and green for Irish Regiments. It so happens that out of the eight Irish Regiments of Foot seven are Royal Regiments, so that only one Corps, the Connaught Rangers, wears as its facing colour its native green.

All Scotch Regiments, though Lowlanders, are now dressed in Highland tunics with basque skirts, and the tartan trowsers called trews.

A Scotch head-dress, the Glengarry bonnet, was introduced as a forage-cap for the whole of the Infantry. Formerly the Highland Regiments had worn the round blue bonnet with a dice-band as a forage-cap, but gradually the Glengarry came into fashion among them, and then into other Scotch Regiments, and at last it was adopted for the whole of the British Infantry, its advantage being that it folds flat and can be so easily packed in the valise. A somewhat similar cap called by the French "*bonnet de Police*" is worn in the French, Spanish, Portuguese and Italian Armies. It folds flat like the Glengarry, but is high behind as well as in front: it often has a tassel in front, and with a badge and coloured braid trimmings has a very smart appearance. A folding cap like a travelling cap was issued to the Guards at the time of the Crimean War called a "Balaklava" cap. It was of dark blue cloth trimmed with white cord (gold braid for the officers). It was not liked however and soon disappeared, but it has lately been resuscitated as a field service cap for the Staff and Cavalry and Artillery officers.

The Mounted branches of the service and the Foot Guards still continue to wear the old round forage-cap in undress uniform on ordinary occasions. In the Cavalry the booted overalls which had been copied from the French were now replaced by pantaloons and long boots. The Hussars got back their Hessian boots for wear in evening dress. The Light Dragoons and Hussars having for long been equipped and armed alike, and the dress being the only distinction between them, after the Crimean War this distinction was abolished, and the four remaining Regiments of Light Dragoons were made into Hussars.

The Hussars had been allowed to wear moustaches, when they were first converted from Light Dragoons at the commencement of the present century. After Waterloo, all Cavalry Regiments were permitted to share their privilege; but it was not till the Crimean War that the Infantry were allowed to grow moustaches.

When the traveller Vambery visited Herat towards the close of the reign of the Amir Dost Muhammad, he saw the Afghan soldiery in garrison there clothed in cast-off red coatees of English soldiers, and wearing their chakos with peaks and their upper lips shaven, in order exactly to imitate the appearance of Englishmen. Though the national dress of the Afghans has been made by Englishmen since into a handsome and serviceable uniform dress, it never occurred to the Afghans themselves to do so, and Runjeet Singh, the Maharajah of Lahore, also dressed his fine soldiers in the cast-off clothes of English soldiers and sepoys, or in exact imitation of them. But these Oriental potentates are not after all the only people who copy foreign fashions in the dress of soldiers.

The National Italian Army only came into existence after the conquest of the kingdom of Naples and the Papal States by King Victor Emmanuel of Savoy and the partisan Garibaldi in 1861. It was formed on the model of the Piedmontese Army which served for a nucleus to it.

The uniform is dark blue, the buttons and ornaments generally of white metal. The Infantry have red facings and trimmings, the Artillery yellow, and the Engineers crimson.

The Cavalry Regiments have all facings, braid and trimmings of different colours for each regiment. The Heavy Cavalry wear a steel helmet with a high comb, but without any crest, after the Austrian fashion. They are armed with lances without flags, and have their grey overalls booted with leather like the French.

The Light Cavalry wear a black fur kalpak and are armed with sabre and carbine.

The King's Body Guard have helmets like the Heavy Cavalry, but with a scarlet feather at the side, and a tail of black horse-hair hanging down the back like the French Cuirassiers. They have steel cuirasses with a golden sun on the breast, and white leather breeches and jack-boots.

The Infantry wear a cylindrical chako or "kepi" as they call it, with a metal star and a tricoloured cockade in front. Their coat, and indeed that of all branches of the service, is a long jacket over which the waist belt is worn. White canvas gaiters are worn under the trowsers, ordinarily over them in bad weather and in marching order. Trowsers of unbleached linen are commonly worn. All the clothes are made very loose and roomy, and are no doubt much better so, though it gives the men an appearance foreign to our idea of smartness.

The sharpshooter Battalions called Bersaglieri are the finest troops in the army. They wear wide-awake hats with low crowns with a falling bunch of cock's feathers in them. Their dark blue clothes are made looser even than those of the line, and give them the appearance of sailors. All the coats are made with rolling collars in the Italian Army, leaving the soldier's neck free. In review order a low white linen collar is worn inside the coat collar.

In marching order the men have their chakos covered with white linen cap-covers, and wear their bluish-grey great coats (which, as in the case of the Russian Army, are their marching and service dress), and trowsers and gaiters of unbleached linen. They have knapsacks of cow-hide like the Germans.

The Alpine Companies of Riflemen are dressed like the Bersaglieri but have steeple-crowned felt hats.

A new style of military head-dress was invented by Marshal O'Donnell for the Spanish Army. It is a low cap of white felt looking like a broad-topped chako in front, but with no crown, the cap sloping from the base at the back to the top of the front. It is called the "Ros" and has a smart appearance and certainly a peculiar one.

The Spanish Army is dressed in the almost universal dark blue. The Infantry wear scarlet facings and the lapels of their double breasted frocks turned back to show the scarlet lining. The light battalions wear all blue.

The Austrian Army has lately abandoned its traditional white, and is now dressed in blue tunics with red trowsers like its hereditary foes, the French. Formerly in the early days of standing armies and

uniform, blue was only worn by the Dutch, Swedes and Prussians. Now the English and the Russians are the only two nations who have not adopted it for general use.

One of the greatest revolutions in military dress ever made has been effected in the Russian Army by the Emperor Alexander the Third who has restored to the Muscovite soldiery the national dress abolished by Peter the Great. All ranks and branches of the Russian Army now wear as their head-dress a low, round, flat-topped sheepskin cap, a dark green cloth blouse without any adornment, and with outside pockets, and short trowsers which are always worn tucked into the tops of high boots. The same dress is worn by the Cavalry, the regiments of which have all been made into Dragoons, armed with rifle and bayonet in addition to their Cavalry sabre, and trained to fight on foot as well as on horse back. In fact the Russian Cavalry has been turned into Mounted Infantry. Lancers and Hussars have been abolished along with their distinctive dress. Only in the Guards' Cavalry have the crack corps of Cuirassiers, Dragoons, Hussars and Lancers been as yet allowed to retain their gorgeous uniforms and to flaunt before the eyes of their Pan Slavist Sovereign, their German tunics and their Hungarian caps. For a fatigue and service dress the Russian soldier wears a blouse of white canvas. The troops in Turkistan and Central Asia have adopted the leather trowsers worn by the Uzbeks and Turkomans which they dye of a uniform red colour.

There has been much talk of late about the advisability of changing the colour of the British uniform from the famous and time-honoured scarlet to some neutral tint. The improvements in the range of fire-arms and the increased rapidity of loading have made the advance of troops under a heavy fire more difficult and more dangerous. Battles now resolve themselves into skirmishes on a grand scale. Invisibility is a desirable quality in skirmishers and sharpshooters; a fact long recognised in the history of uniform for the reason of clothing riflemen and sharpshooters in green was simply because that colour was supposed to be more invisible than any other. But it must be remembered that human instinct does not teach us to try to render ourselves invisible to our foes. Even the Red Indian, whose whole idea of warfare is in ambuscades, surprises and skirmishes, paints himself in vermilion hues and adorns himself with gaudy feathers when he goes upon the war-path. And all savages are the same: they bedeck themselves with all their finery, and bedaub themselves with ochre when they go forth to battle, with some idea perhaps of impressing their enemies, but more because they feel that on this supreme occasion, when all their powers of strength and courage must be put forth, their outward appearance should correspond to their exaltation of spirits. The more civilized and more cultivated man rises superior to such crude ideas, and the more sober taste which is derived from the diffusion of artistic knowledge was hardly parodied by the author of "Patience" when he made his aesthetic young ladies start back in horror from the "primary" colours of the red and yellow tunics of their Dragoon admirers. Soldiers, however, are not generally recruited, from the most cultivated of mankind, and the

passion for martial glory is often combined with the coarser kind of vanity which finds satisfaction in personal display. In armies recruited by voluntary enlistment, a handsome uniform is found to have a material influence in attracting men into the ranks : and the fine appearance of hostile troops on a battlefield has often a disquieting effect on the nerves of their enemies. In India certainly the British red coat has attained a prestige as great as the white face of its wearer : and we remember one instance of the fort of a rebel talukdar in Oude which had held out for a week against the King's forces, being promptly evacuated by the defenders on the sight of a few red coats in the camp of the besiegers.

The red coats of the English in India are spoken of with reverence in places in Central Asia where no English officer is allowed to set his foot, according to our pusillanimous policy.

But after all, the colour of a dress or the amount of ornament (as long as it does not interfere with the wearer's comfort) is a matter of minor consideration. In bush-whacking or guerilla warfare valuable lives may be prematurely lost by their owners presenting a too conspicuous mark to an enemy ; but when masses of troops are moving on both sides, when hundreds of thousands of men are brought into line of battle, it signifies very little what they wear or whether the individuals composing the masses would be visible or invisible at a distance. If a man wants to save his own life, we admit that the advocates of invisibility have the best of it ; but there is a better way still of securing that result, *viz.*, staying at home.

OCCASIONAL PAPERS.

KRIEGSPIEL AT SIMLA.

The second game of the season was played at the United Service Institute on the 10th August by the following officers :—

Colonel Strong, Bengal Cavalry	...	Commander of Blue Army.
Captain Lloyd, R.H.A.	...	" Red Army.
Chief Umpire	...	Colonel Hallowes,
Assistant Umpires	...	{ " Crookshank.
		{ Captain Sawyer.

General Idea.—An invading army (Red) is moving south and takes up a position on Chobham Ridges. The Blue Army holds a line from Blackwater to Farnborough. Red has a dépôt of stores, &c., at Wokingham, and expects reinforcements to arrive there from Oxford, but not before 9 A.M.

Blue detaches a force under Colonel Strong to destroy the Wokingham dépôt by shelling it from a distance of not less than 2,000 yards.

Red, anticipating this action on the part of Blue, also detaches a force for the protection of the Wokingham dépôt.

Both these forces are detached on the evening of the 9th August, with orders to commence operations at daylight on 10th, and they bivouac: Blue on Yateley Heath and Red at Long Down near Sandhurst.

(Officers who have been at Aldershot will readily recognise the country where the fight took place.)

The forces detached were of the following strength :—

Red.

- 3 Battalions of Infantry.
- 8 Squadrons, Cavalry.
- 1 Battery, R. H. A.
- 1 Battalion (extra) in Wokingham.

Blue.

- 6 Battalions, Infantry.
- 8 Squadrons, Cavalry.
- 2 Batteries, R. H. A.

At daylight on 10th August, Red pushed forward his battery to Finchamsted Ridge where it took up an excellent position commanding the bridges over the Blackwater. At the same time the Red cavalry made for the bridges, and soon came in contact with the Blue cavalry in the valley of the Blackwater. A battalion of infantry also marched on Finchamsted, and the battery was duly escorted by a squadron of cavalry. The remainder of the Red infantry took the line of the S. E. Railway (rendered useless for rolling stock) and marched in the direction of Wokingham. The Red battalion in Wokingham received an order by messenger, sent off at daylight from the Red Commander, to march in a S. W. direction so as to join hands with any part of the Red force which might be sent forward to cover Wokingham.

The Blue Commander gave order for one battery and the great bulk of his cavalry to march at once towards Wokingham by a good road, well to the west and out of sight of Red, crossing the Blackwater at Eversley Bridge. The remainder of the cavalry was ordered to cover the advance of the second battery and all the infantry across the Blackwater under Finchamsted Ridge.

As the two forces started from points at no great distance one from the other, their cavalry came into contact at an early hour. The Blue cavalry, however, was too strong for the Red at the bridge for which the Blue infantry was making, so its passage was secured, and it was the intention

of Blue to make his way by force of numbers straight on Wokingham *via* Finchamsted and the road which runs parallel to the S. E. Railway. It is probable that this might eventually have been accomplished, but the Red were in such good position on Finchamsted Ridge that the Blue suffered severely in guns and men in crossing the valley and river Blackwater, and found on gaining the opposite side that the Red battery was supported by cavalry and infantry which, although outnumbered by Blue, was very strongly posted and prepared, and quite equal to disputing every yard of ground in the thick woods between Finchamsted and Wokingham. During this time the Red infantry and half battery detached from Finchamsted Ridge were making steadily for the neighbourhood of Wokingham.

To the west the strong force of Blue cavalry and battery were making their way also in the direction of Wokingham; but soon after crossing Eversley Bridge the Red cavalry, which was scouring the country in that direction, caused such annoyance as to induce the Blue artillery to unlimber and fire on them. The Red cavalry certainly sustained some considerable loss in doing this, but it materially assisted by thus delaying Blue in carrying out the object of the Red army as to being first on the heights near Wokingham.

The Red eventually succeeded in getting between Wokingham and the Blue army, and, holding the inner circle, had only to choose the best position on the high ground to hold the western Blue force in check, and the operations of the Blue infantry at Finchamsted, and its forcing the small Red force there inch by inch through all the thick woods to Wokingham before 9 A.M., was considered so problematical by the Umpires that the game was brought to a conclusion, the result being declared to be in favour of Red. The chief Umpire, in summing up, remarked that, in spite of his superior force, Blue had undoubtedly a very difficult task to perform, and, taking into consideration his being bound to carry out the shelling of Wokingham before 9 A.M., he considered that, should the Red succeed in causing Blue sufficient delay to allow of his (Red) getting to the heights near Wokingham first, the object of Blue was practically frustrated.

Other officers also remarked on the manœuvring of the two forces, and the unanimous opinion was that Blue might have arrived in superior force to Red at Wokingham had his western force simply held the Red cavalry in check with his own cavalry, and the guns and bulk of the cavalry pushed straight on as fast as possible without allowing themselves to be committed to action and consequent delay on the way. It is much to be regretted that, as usual, the attendance of officers as spectators was very small; and yet, to judge by the interest taken in the game by those who did attend, one may fairly conjecture that they did not consider it time lost, and that, did more attend such meetings, they would at any rate be equally well amused even if they failed to profit by the lessons which may always be learnt from a game of Kriegspiel. Many contend that it is not the same thing as real warfare, and that moving pieces on a map is quite different to manœuvring troops in the open. Be this so or not, there can be no doubt that the preliminary part is, at any rate, exactly what would occur in real warfare, *i.e.*, trying to divine the object of an enemy, and by the assistance of a map of the country so to dispose one's own force as to frustrate his designs and secure victory. The study of a scheme and working it out by a map, and above all the writing of the orders for the various arms, is invaluable practice in the art of war. And the mere fact of seeing calculations made beforehand as to rates of march, the junction of two forces, or their simultaneous arrival at a certain point from different directions, turn out correct must inspire a confidence which in real warfare would prove a comfort to the calculator by removing all nervousness as to the result of his arrangements.

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United Service Institution of India.

VOL. XIV.

1886.

No. LXV.

NIGHT FIGHTING.
A Translation from the Russian.

NOTICE.

GENTLEMEN sending contributions to the "Journal of the U. S. I. of India" are requested to write on one side of the paper only.

By order of the Council.

JOHN F. L. THATCHER, CAPT.,
Secretary.

and principal stars on any night in the year. This could well be taught at the Staff College.

My second object in making this translation is to show how our neighbours, the Russians, continue to pay a very practical attention to the training of their troops for war. The article, from which I have only translated an extract, included an interesting account of the night attacks which took place during the Russo-Turkish war of 1877-78, such as the storming of Kars, the capture of Fort Hafiz, the assault of Erzeroum, the fight at Shipka on 5th September 1877, and which I regret that I have not at present the time to translate.

H. M. BENGOUGH, Colonel,
Assistant-Adjutant-General,
Bangalore Division.

Dover, May 7th, 1886.

Since sending this translation to press, I am glad to see that the subject of "Night Attacks" has been brought forward by Captain R. F. Johnson, R.A., in a short treatise, published by Messrs. Clowes and Sons, from which much useful information on the subject may be gathered.

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PREFACE.

I HAVE made the following translation from an article entitled "Night Fighting," in the "Russian Military Magazine" (*Svoennoi Sbornik*) for December 1885, for two principal reasons: first, because the subject itself appears to me deserving of more attention than it has as yet received from our own military authorities. No rules on the subject of night fighting have, I believe, been published in any book of regulations, and no system for its proper conduct exists in our service. Its advantages are acknowledged, and its practice is not unknown to us, the night attack in Tel-i-Kabir being a notable instance; but our officers are left to evolve a suitable system in the field. A few simple rules and principles for guidance in night fighting and night marching might, I think, be usefully included in our "Field Exercise."

Its practice might also be enjoined on all arms of the service. It is astonishing what a useful effect a little practice has in accustoming troops to move about in the dark. I know that in two Divisions in India the troops practise regimentally outpost duty by night once in every month, remaining in position for at least two hours after dark. All staff officers should, I think, know sufficient practical astronomy to enable them to ascertain the positions of the several constellations and principal stars on any night in the year. This could well be taught at the Staff College.

My second object in making this translation is to show how our neighbours, the Russians, continue to pay a very practical attention to the training of their troops for war. The article, from which I have only translated an extract, included an interesting account of the night attacks which took place during the Russo-Turkish war of 1877-78, such as the storming of Kars, the capture of Fort Hafiz, the assault of Erzeroum, the fight at Shipka on 5th September 1877, and which I regret that I have not at present the time to translate.

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H. M. B.

NIGHT FIGHTING.

UNDER the existing conditions of the armaments of troops, and of their tactical training, and considering the very general adaptation of fortification to the strengthening of positions, the defence now possesses very important means of resistance against even a considerable superiority of force. During the late Russo-Turkish campaign, Suliman Pasha threw himself upon Shipka with his whole army, composed of his best troops, trained in the wars with the Herzegovinians, but all his furious attacks during several days, *viz.*, from 9th to 13th August, were repulsed by a handful of defenders, whilst the Turkish troops suffered severe losses.

The storming of the hill of Plevna on 30th and 31st August had a similar result for the Russian troops; in spite of the considerable superiority of their force, their excellent morale, and the impatience with which they looked forward to the battle in order to avenge themselves on the Turks for their former ill-success at Plevna, and in order to put an early end to the harassing siege of that place,—in spite of all this, the fight ended disastrously for the Russians.

The two battles at Trestenik, the fight at Chair-Kyoni, and many other affairs in which the defenders, notwithstanding the superiority of the attack, not only successfully maintained their position, but caused their adversaries serious loss, show that the attack of a position strengthened by field works is, with the present arms of precision, accompanied by insuperable difficulties, and frequently resists the efforts of the best troops.

Hence it has been observed that in recent campaigns the attack frequently endeavoured to capture the enemy's position, not by open force, which would in all probability have been accompanied by great loss, but strove either by means of a turning movement to compel him to relinquish his position, should circumstances be favourable (as in the case of the western detachments under the command of General Gourko during his operations against the Turkish fortified positions on the Balkans), or to cloak his dispositions for the attack of the position under the cover of night.

The night combats that have occurred in recent wars have had sometimes important results, but in view of the difficulties accompanying operations at night these have only been practised under particularly favourable circumstances. In the campaign of 1877-78 night attacks took place frequently—we see a complete succession of night combats, giving results more or less important for either combatant. The greater number of examples of this sort of action in recent campaigns demonstrate, first, that they are necessary to avoid the heavy losses which accompany attacks by day on positions strong either by nature or made so by fortifications; and, secondly, that troops now-a-days from their mobility, their powers of manœuvring and of rapid change of formation, and from their tactical organisation, are better fitted to overcome the difficulties which must be encountered in all night operations.

From the night combats of recent wars we would indicate the following : After the fight at Laon, on the nights of 25th and 26th February 1814, Blücher attacked the army corps of Marmont, which had arrived at Laon to join Napoleon's army, and, taking advantage of his knowledge of the locality and of the negligence of the enemy, he dispersed the army corps by a single attack, and thus frustrated the plan of Napoleon to make a second attack on the Laon position.

The attack of General Gismar on the fortified Turkish position at Boyarleshti in 1828 affords a remarkable instance of a night attack, both from the boldness of the enterprise and from its results. General Gismar, with a force of 4,000 men, attacked a Turkish army corps of 20,000 men on a dark night, when his troops, without firing a shot, and without any noise, moved straight into the enemy's camp both in front and on both flanks. The astonished Turks quickly deserted their trenches, and the fight ended by the hostile army corps of 20,000 men being completely dispersed, and losing their camp, artillery and baggage.

Of the night combats of the Russo-Turkish campaign, the most noteworthy are—the storming of Kars, the capture of Fort Hafiz, storming of Erzeroum, and the battle of 5th September at Shipka.

The capture by a midnight assault of the formidable fort of Kars, provided with an abundance of warlike material and stores, armed with more than 300 guns of heavy calibre, and defended by a garrison of 25,000 men, forms a conspicuous incident in military history.

This event attracted the attention of military circles throughout Europe, and the Press published several articles showing the importance that night operations might have in future campaigns.

The assault of Kars also attracted attention from the inconsiderable loss, compared to the results, sustained by the Russian troops : the total loss in the capture of the place was 77 officers and 2,196 other ranks, so that this assault cost them less than the fighting on 7th and 8th July at the Hill of Plevna, and little more than the battle at Hill Helene on 22nd November.

The capture of Fort Hafiz by two battalions of the Kutai Regiment (Russian) was not only itself a brilliant achievement, but had important results, as this act gave rise to the idea of capturing Kars by a night attack.

The storming of Erzeroum, which resulted so disastrously for the Russians, affords a lesson of an opposite character, for it shows that night warfare can only be brought to a successful issue when its dispositions are made in accordance with the true principles of such operations ; in all other cases it must lead to disaster.

The assault of the Shipka position by the Turks on 5th September was attended at first with success. They succeeded in gaining possession of the first line of the Russian trenches on the Hill St. Nicholas, and in maintaining themselves there until mid-day ; the unsuccessful result of the night attack was due to the first detachments not receiving timely support from the storming columns.

From the above examples the important rôle that night combats play in the operations of war is evident, so that it is difficult not to agree

with the general opinion that in future campaigns an important place will be given to them. But since the success of those operations must depend on very complex circumstances and accidents, attention should be directed in peace time to the study of those operations in all their details, and also to the training of troops to manœuvre and fight by night.

A theoretical investigation into the principles of night encounters appears not only desirable at the present time but actually indispensable, both because troops at peace manœuvres of this character are placed in a very difficult position, from the absence of leaders to direct them when moving under cover of darkness, and also because neither tactical nor other books of instruction are there any regulations for operations of this kind.

For this reason we take up the pen in order to formulate certain rules for the conduct of war operations at night. We will first describe the general characteristics of such operations; then speak of their conduct both for the attack and for the defence; and, lastly, give a short account of the principal night combats of the late (Russo-Turkish) campaign, and also of the night manœuvres carried out this summer 1885) in the camp of exercise at Bender. The main characteristics of all night operations are comprised in the following:—

1. *The difficulty in identifying one's position, even in familiar localities.*—This difficulty arises from the inability to see objects by which to identify a position on a dark night, and even if visible they present a different appearance to that they have in the daytime; bushes appear as a large wood, corn-fields as bushes, herds of cattle are taken for hostile columns, &c. Similarly deceptive appearances of objects occur even on moonlight nights. The most difficult localities for identifying one's position are, level places on which there are no conspicuous objects by which to test the correctness of any given direction. Hilly or varied ground, especially on a clear night, is much more favourable for finding one's position.

2. *Leading is almost impossible in night operations.*—As only a part of the troops can be moved for any given objective, their further direction after being set in motion becomes not only difficult but generally out of the question; reports and orders either fail to be delivered altogether, or do not arrive in due time, and hence all direction in the fight is taken out of the hands of the senior officers, and depends entirely on the initiative and dispositions of the detachment leaders, and especially of the immediate executive officers, such as battalion and company commanders. Besides this, it is impossible to calculate either the distance of the detachments from any definite point, or to rely on any combination of time or action, and therefore each column should be of suitable strength, and should rely on its own resources. Officers in chief command can only influence the course of the fight through the reserves immediately under their orders, but even this influence is weak or often even impossible, for, having sent forward a detachment from the reserve to strengthen any given point, it is impossible to calculate if the troops so sent will arrive in time.

From the above two characteristics, it follows :—

3. *That the good or ill success of Night Attacks depends chiefly on varying accidents*, which it is impossible to foresee or to prevent ; some of the troops sometimes take a different direction to that given them, some chance obstruction in the way may cause general disorder and bring disaster on the whole expedition, or one's own troops may be taken for those of the enemy, and fire may be opened on them ; on a false alarm the troops may halt, anxious and uneasy, and may fall sometimes into complete disorder, to remedy which is at night very difficult, and in any case must result in great loss of time, &c.

4. *Firing at night*, from its indifferent effect, is not only *useless* but may be *harmful*, both because in the dark the fire may very possibly be directed on one's own people, and because the control of fire under the moral conditions of a night combat is very difficult ; a disorderly fire demoralises troops.

5. *In Night Combats, Troops are in the highest degree impressionable* ; the men lose their coolness, the slightest noise, rustle, the screech of a night bird, the bark of a dog, a distant whistle,—all these alarm the troops, cause them to listen, so that to every sound and sight they give an undue or exaggerated significance. Even in peace manœuvres at night, especially for the first time, troops are remarkably agitated ; this agitation is more noticeable among men sent to wait at any point than among those on the move. Practice in peace time might remove, or at any rate very much lessen, this susceptibility.

Knowing the chief characteristics of night warfare, it is not difficult to evolve the principles which should be followed both in the attack and the defence.

For a successful attack are necessary—

(a) *A knowledge of the locality and of the dispositions of the enemy.*—If even by day one cannot attack a position haphazard without a previous and detailed reconnaissance, how much more necessary is this at night, when one cannot see the dispositions of the enemy, nor recognise one's own position, nor estimate the difficulties to be encountered ! But for this considerable time is necessary, which is generally obtainable by the attacking force only when the enemy is in a permanent position ; thus the more considerable night attacks would take place only at a siege, or investment of a fortified position or point, or in the case of an antagonist taking up a strong natural position. Under these circumstances sufficient time would be available for ascertaining all the conditions affecting a night attack.

When surveying the locality, attention should be paid to its relief, to objects defining positions, which may be of great service in preserving the direction for the troops moving at night, to the direction of the roads and their practicability, &c. But bearing in mind that objects at night appear under a different aspect to that they have in the daytime, it is desirable that the reconnaissance by day should be repeated by night, and not once only but several times, so as to become familiarised with the relief of the locality, and especially with the objects selected to identify positions by night, or by moonlight, having regard to the night proposed

be selected for the attack. At this reconnaissance all the individuals who would have any command in the assault, even including, if possible, many commanders, should be present; also all staff officers and those cavalry officers whose duty it would be to lead the columns.

Besides the study of the locality, a detailed investigation of the enemy's position is required—as to what strength he may have in different points, an accurate sketch of the profile of his defensive works, whether having an open gorge or not, the position of his artillery and reserves, both general and local, &c.—this should be done in accordance with the rules laid down for such reconnaissances. In order to obtain an accurate idea of the dispositions of the enemy, it is often useful to make a reconnaissance in force, as without definite information of the strength and dispositions of the antagonist and his fortifications, it is not advisable to undertake a night attack, which in that case would most infallibly end in complete disaster.

Such reconnaissances have also this advantage, that they harass the defenders, and accustom them to this sort of action, so that when the assault is actually delivered, the enemy may remain still under the impression that it is only a repetition of the action to which they have been accustomed, and therefore may not take steps to prepare their troops to resist the coming danger.

(b) *Accurate and simple directions for the general objective, and also for the local objective of each detachment of the Troops.*—If any complicated operation rarely succeeds in the daytime, at night such must unavoidably end in total disaster, and therefore should have no place in night enterprises. Here there should be no stratagems or artful manoeuvres, no flank movements, as in the unfortunate attack of Erzerum; each detachment should be betimes directed on some known object, and should strive only to obtain its aim, not being diverted thence to any collateral objects. Similarly, two objectives should not be given to one detachment, as in this case it often happens that neither of the objects is attained. At the storming of Kars, the columns of Prince Serebriakoff were given a double object—to capture the Fort of Suvar, and afterwards to operate on the rear of Fort Cheem, the attack of which in the front was entrusted to the column of General Komaroff. Fort Suvar was taken, and the column moved to the rear of Fort Cheem, but there, after some heavy fighting, believing that General Komaroff had not succeeded in advancing to the attack of this fort on the front, the column retired with great loss, first to Fort Suvar, and then evacuated this fort also without any reason, and it was only on the order of His Excellency the Commander-in-Chief that the column was again sent to capture a second time Fort Suvar. Thus the attack of this column, except for the interference of the Commander-in-Chief, would not have attained either of the aims set before it.

(c) *For the attack either such points should be selected, the capture of which would have most effect on the enemy, that is where he may be least on his guard, and which can be readily strengthened by suitable measures so as to make a local success contribute towards the general result, or such points and portions of the enemy's position should be*

selected, the taking of which by day would cost great loss, and might yet be indispensable for the further conduct of the assault.

(d) *A suitable disposition of the Troops in Columns should be made and strong Reserves kept in hand.*—The composition and number of the troops in each column should depend on the object allotted to each, on the nature of the obstacles to be overcome, and on the strength of the enemy to be met. In any case it is not desirable to detail for the actual attack an excessive number of troops, but only as many as may be necessary for the first assault, the remainder being held in reserve. Since the active action of cavalry and artillery in night affairs is limited, and depends greatly on the degree of darkness, infantry or dismounted cavalry only should be detailed for the attack. Cavalry and horse artillery may be used to connect the several infantry columns, or may form an independent column for action on a flank, or lastly may be directed on the enemy's line of retreat, with the intention, in case of a successful issue to the fight, of compelling the enemy to lay down their arms, or at any rate of completing their moral discomfiture. Artillery should be detailed for each column in small numbers, for the immediate arming of each captured position. Besides this, in the composition of each column should be included: scouts to precede the column; a company of sappers with dynamite and instruments for destroying and preparing different kinds of obstacles; fatigue parties with scaling ladders, fascines, gabions, and such like materials; artillery detachments to work any captured guns, or to destroy them; lastly, reliable guides if such can be found among the local inhabitants; if not, special officers should be selected for this duty, well acquainted with all the local conditions of the operation.

Bearing in mind that all night operations are attended with numberless accidents, it is necessary to retain a strong reserve, by the aid of which the commander may be able to meet any unexpected hostile movement, and may, if only in part, regulate and direct the fight. But besides the general reserve each column should have its own reserve, both to support the attacking detachment, and to be prepared for any unforeseen attack. (Ex.: the column of General Alchazoff at the storming of Kars.)

If it is generally advisable to be economical in the disposal of reserves, yet this is especially to be observed in night attacks: then one should accede very grudgingly to the many requests for support which may be repeatedly made during a night combat, when every danger, under the influence of the darkness, seems much more serious than it is in reality. In any case a part of the reserve should be kept till the last minute of the fight, so that some means may remain under the hands of the commander to meet a possible hostile action on any point, and in the event of an unsuccessful issue to cover the retreat.

(e) *Constant communication should be preserved between all portions of the force.*—This in night operations is difficult, and yet it is only on condition of the maintenance of this connection between not merely the columns themselves, but between the columns and the reserve, that a successful result can be counted on. In peace practices of night operations

special attention should be paid to this point, and to ascertaining by trial the best means of maintaining this connection. Here we may recommend the following measures, *viz.*, that the staff of orderly officers, &c., may be composed as far as possible of individuals accustomed to this sort of service in peace time, and well acquainted with the locality in question; a certain number of such officers should be detailed to accompany each column with a proportion of cavalry orderlies; special signals should be arranged by which the principal movements of the detachment making the signal may be known; a sufficient number of lanterns, showing a light to the rear, should be furnished to each detachment. These lanterns would serve to collect the detachments as well as for points by which orderlies carrying messages might find their position; all the leading detachments should have lanterns, showing a light to the rear, fastened to the knapacks of the men in the rear of the column, and parties of men marching at small intervals should maintain communication between each other by the same means.

(f) *The attack should be as far as possible unexpected and decisive* — Although under the present system of protection by advanced posts and regular reconnaissances it is impossible to count on taking an enemy by surprise, yet it will suffice if the attacking troops appear before him more or less unexpectedly. This may be accomplished, first, by nightly attacks on his advanced posts, using for this purpose skirmishers, or sometimes complete detachments, by which means the enemy may not only be harassed, but may be accustomed to night attacks with considerable numbers; secondly, by keeping the intention and plan of attack profoundly secret, even from one's nearest assistants, until the day of the assault; thirdly, by striving to conceal, by all possible means, the final advance of the troops to the assault as far as the hostile outposts, for which it is necessary to observe complete silence, to prevent all talking, the words of command being given in an undertone; to forbid smoking, and especially the striking of matches. The artillery should tie the gunwheels with straw, &c. However, when every precaution has been taken, it is hardly possible to conceal the movement of any considerable body of troops; therefore the best method to surprise an enemy is by a rapid and decided attack, so that the time between the first meeting with the enemy's advanced posts and the final attack may be as short as possible. Here no reliance can be placed on fire, and the bayonet should be early called upon to settle the affair. To open fire is useless, and besides this it discloses to the enemy not only the direction, but the actual position of the troops. Large masses are not necessary, for in the dark the enemy cannot know the strength of the attacking force; but for night attacks it is essential that the troops should be selected, and highly disciplined, able to preserve their formation under all contingencies of the fight; with indifferent troops it is best not to think of such enterprises.

Since the defender's fire even by moonlight can have but little effect, the order of battle of each separate detachment should be as compact as possible, as being the most suitable for a bayonet charge. Thus the best formation for the first line would be company columns at close

intervals; all the reserves should be at reduced distances to support the charge, and to keep up close communication. The darker the night the closer each detachment should remain the one to the other. Instead of lines of skirmishers which at night are useless, the front should be covered by patrols taken from the reconnoitring detachments, and therefore acquainted with the ground. The rôle of these patrols is simply that of protecting the advance, and therefore on their meeting any of the enemy's sentries, or advanced posts, or patrols, they should make use of the bayonet only, or make prisoners. The reserves should move similarly covered by special patrols, with this object, that if a wrong direction is taken they may not appear in front of the enemy in a formation unsuited to fighting, for any such unexpected encounter might cause confusion and disorder, which by night might have a very hurtful effect on the whole course of operations.

The place for the artillery and cavalry accompanying the columns is in rear of the local reserves, which as well as the general reserve should preserve the ordinary formation of reserves, as this formation is the most suitable for preserving order and close communication.

In such an order of battle the troops would advance silently without firing, and having reached as near as possible to the point of attack, dash in with the bayonet. To charge with the bayonet over a considerable distance, as is done by day, is in night attacks inadvisable, and might lead both to a useless dispersion of troops, and also to an ill-combined attack and a loss of strength for the bayonet charge. When storming field works the troops should attack the flanks and gorge, as being the weakest points.

After taking a position or fort, the troops should not be induced to pursue, as in the dark it is difficult to estimate your own position, and all the surroundings on which further action should be based; therefore it is necessary before all things to collect and reform the detachments, and then to proceed at once to strengthen the position, and place the artillery, in a word to take all steps to repulse the enemy, who probably would make every effort to retake the lost position. In any case it is necessary to put the captured position in a state of defence by dawn.

To facilitate the collection of the troops lanterns may be usefully employed, by which various positions designated beforehand may be signified as the place of assembly for the several detachments; for this purpose it would be useful to have lanterns with variously coloured glasses.

The place of assembly for the troops should be under cover from the enemy, and if this is not possible the lanterns should be placed on a flank, so that, if the enemy should remark them, he may not be able to direct fire on the point of assembly.

If it is decided to attack a part only of the enemy's position, a demonstration should be made against the parts not attacked, as they may easily deceive the enemy in the darkness, draw away his attention and his troops, and so assist in a very important manner towards the general success. The demonstrations should be made with energy, not neglecting an opportunity, should one offer itself, to capture the point

against which the demonstration is made. Here artillery may be of great service, and should therefore be detailed in greater numbers than for the columns of assault.

The preparation of the attack should consist of—such a previous disposition of the troops that each detachment may be posted opposite the point designated for attack ; the clear definition of the object of attack for each detachment, so that each may move straight on to the given point ; the preparation of the different materials required for an assault ; and, if a fort is to be attacked, the preparing the infantry attack by a heavy artillery fire, so as to destroy the permanent defences. The importance of an artillery preparation is very apparent from the stubborn resistance of Forts Hafiz and Kanla, owing to the indifferent effect of the Russian artillery fire.

What time should be selected for a night attack ? It is not possible to give a positive reply to this question, as the choice of time must depend on many local conditions, on the numbers of the enemy, and on their moral condition. The darker the night the more unexpected will be the attack, the less the loss, and the greater the probability of success ; but the movements of the troops, the preservation of order and of the direction of attack will be the more difficult, the chances of accidents greater, as also their influence ; on a moonlight night the latter consideration has less effect, but the loss will be greater, and the assault less of a surprise. In any case the attack should be made at night, and not at dawn, so that the troops, having taken a position, may be able to intrench themselves before daylight.

The difficulties attending a night attack are evident from the foregoing ; similar and even greater difficulties, though of a different kind, attend the defence of a position attacked by night ; the conduct of the fight does not entirely escape from the hands of the commander, as each detachment of troops has its recognised position, and consequently reports and orders can be quickly conveyed, and timely aid given when required ; but even here, too, a considerable initiative passes into the hands of subordinate commanders ; accidents occur less frequently than in the attack, but here, also, in point of *moral* the position of the defenders is not enviable ; the attacking force knows what it wants, where it is going, how to direct its troops, when to make its assault whilst the defenders have to wait in expectation, not knowing when and in what direction the enemy will strike ; they feel that there is danger, and even see the results of the fighting already begun, and yet cannot estimate all the circumstances, and take corresponding measures, so that they involuntarily exaggerate the danger itself. It will be evident from this under what moral pressure the defenders find themselves ; and if to this be added that the attackers strive previously to harass their enemy physically also by their action previous to the attack, that the attack finds their adversary more or less unprepared for the combat, and that an expectant position produces moral depression in the men, it is evident that to come with honour out of a defensive night contest can only be expected from brave and disciplined troops, in skilful hands, and accustomed to night operations in peace time.

The defenders, in anticipation of a night attack, should take betimes every measure to facilitate the conduct of a night combat, prepare plans of defence, indicate to each detachment the portion of the position intrusted to its defence, examine in every detail the neighbouring locality, explore all the roads leading to the position, as well as those in rear of it, and take all necessary measures that the enemy's attack may not take them unprepared, for which purpose, besides a careful maintenance of the usual defensive guards, it is desirable to send out as far as possible reconnoitring parties, and to use all possible means for obtaining trustworthy information of the enemy's intentions, and, if possible, even of his plan of attack. The sentries and line of observation should keep a sharp look-out on everything that happens on the enemy's side, paying attention to the slightest change in his position, and reporting at once anything of importance. The sentries and advanced posts should signal the presence of the enemy by firing, on which strong cavalry detachments should be sent out to discover the direction of advance and the strength of the attacking force, and only on ascertaining from the reconnoitring detachments the fact of an actual advance in force should the alarm be sounded and the troops take up their positions. It is the duty of the commander to fatigue his men as little as possible, and especially not to harass them uselessly. This is a very difficult matter, for the attack will strive to keep the defence continually on the alert by sending every night a more or less strong detachment with the special object of alarming and harassing their enemy. In such cases it is a very difficult task to distinguish a real from a false attack; but on its right solution depends the preservation of the strength of the troops and the prospect of a successful repulse of the attack.

The action of the defence for the repulse of such attacks should be based on the essential characteristics of night fighting. As fire cannot then produce any particular effect, and as it is almost impossible to control its direction, it should be used only by volleys, as this sort of fire can be kept better in hand, and has a well-known moral effect; but the chief reliance should be placed in the bayonet, and with this view each portion of the first line should consist of formed bodies in compact order. An extended line is here out of place, both from the weakness of its fire and from the difficulty of directing it, but especially on account of the difficulty of controlling it, for a disorderly fusillade may produce a confusion not easily remedied. Volleys from compact masses should be fired only on visible objects, though exceptionally in a dark night fire may be directed by listening for the sound of an advancing enemy.

Artillery may, by its fire, assist in the repulse of the attack, for although its fire would be but little effective, yet its moral effect is considerable both on its own troops and on those of the enemy. In order to increase the effect of the artillery fire it is useful to note the approaches by which the enemy would probably advance, and to direct the guns on them.

Cavalry mounted cannot take any immediate share in the defence;

its *role* will be limited to keeping a sharp look-out on the flanks, not omitting however, should opportunity offer, to aid the general result by itself attacking; dismounted cavalry may be of great service, by quickly seizing and defending certain points on the flank of the position, or by rapidly reinforcing any party of troops, if no infantry are at hand, or if they may be unable to reach the threatened point in time. Cavalry as now organised and armed would appear to be indispensable.

Thus, the action of the defence may be comprised, as an exemplary case, as follows: Having received accurate information of the enemy's attack, the troops take the positions intrusted to them promptly, but without any bustle, remembering that it is in the preservation of order and coolness more than on anything else that depends the success of a night combat. On the approach of the attackers the artillery open fire, and the infantry fire volleys, and then repulse the attack, with cold steel, whilst the local reserves act on the flank of the attack, avoiding, however, in doing so any serious turning movement. The relative composition and the use of the reserves, and of the supporting links between the several detachments of the troops, should be in accordance with the rules laid down for the attack.

In the event of the undoubted success of the enemy and of a decided superiority of force, the defenders should not precipitate a retreat, but, on the contrary, make use of every means and all their energy to maintain themselves in the position until daylight, since a retreat at night throws troops into complete confusion, and generally ends in a catastrophe. By daylight the defence can, according to circumstances, either advance to the counter-attack or commence the retreat. If by no efforts is it possible to hold the position until dawn, then the retreat should be conducted slowly by detachments, preserving order as much as possible, occupying with unbroken troops positions in rear selected beforehand.

To conclude these inquiries into the principles of night fighting we think it may be useful to give a short account of some night manœuvres carried out in the year 1884 in the camp of exercise at "Bender," when certain facts were brought to light which may have a practical significance.

Since it was the first time that night manœuvres of this kind had been undertaken by either officers or men, both of the exercises were carried out on well-known ground in the vicinity of the camp, by which the loss of time necessary to select new ground was avoided.

The problem of the first exercise was as follows: the defenders, consisting of six battalions and one-and-a-half squadrons and eight guns, occupied a position, strengthened by three field-works, having open gorges. The attackers, who comprised eight battalions, two squadrons, eight field guns, and two horse-artillery guns, received orders to storm the three field-works simultaneously.

The ground on which the manœuvres took place was level, with a slight slope downwards towards the attack. The right flank of the defence rested on a height, the left flank being exposed. The length of the position was about 1,200 paces; the distance between the right

and the centre field-works was about 800 paces, and between the latter and the left 400 paces. The distance between the combatants was fixed at about 600 yards, so that, this being the first exercise, the movements should not be too extended. The troops were brought on to the ground at the approach of dusk, so that they might ascertain their positions, and make their dispositions for action by daylight. The night was very dark, so that only objects at a short distance could be distinguished.

Each of the field-works was occupied by a complete unit, the local reserves being placed a little in rear. The general reserve, consisting of one-third of the whole force, was posted at about 500 paces in rear of the centre. The artillery was distributed in the intervals between the works, having a special infantry escort on the flanks. A party of the cavalry was used to watch the flanks, and a squadron was posted with the general reserve, not immediately with the infantry, but at a distance on the left flank. Infantry outposts were thrown out to the front, and sentries posted.

The troops of the attack were divided into three storming columns ; there was a local reserve with the left column, and the general reserve, composed of a whole regiment, was with the centre column. Each detachment in order of battle was placed at close interval ; the columns were preceded by a thin chain of skirmishers, and patrols were sent out by each column to maintain communication between the columns. The field artillery* remained with the general reserve. A troop was sent to watch the right flank, whilst one-and-a-half squadron, with two horse artillery guns, was directed to the left by a circuitous march to take possession of a height commanding the right flank of the enemy's position, so that on the first discharge from the field-works these guns might open fire on their flank and rear, with a view not only of inflicting material loss, but of affecting the *morale* of the defenders. This detachment also protected the left flank of the attack.

Before it became dark the commander of the attacking force assembled all his officers, including company commanders, on an elevated spot, whence the enemy's position could be seen, and explained the objective of each column, the direction each should take, the recognised principles of night fighting, and the method of attacking the field-works. At the same time one of the columns was directed to adopt some means of defining its movements by means of lanterns, capable of being closed, and placed in rear on its line of advance, but so as to be invisible from the side of the enemy. The method adopted appeared suitable, and it may have a practical application at considerably greater distances, lanterns being placed in succession as the columns advance. The left column, whose line of advance was longer and less direct, as the right flank of the defence was open in rear, marched on a lantern fixed on the knapsack of the guide. The guide was accompanied by an active non-commissioned officer accustomed to night operations. This column throughout its advance preserved accurately the right direction.

* In Russian, "foot artillery."—TRANSLATOR.

It is observable in night manœuvres that the rank and file generally possess better faculties for finding their position, and for recognising objects in the dark, than officers, which may be explained by the fact that the former, by the conditions of their life, have more practice of this sort than the latter.

On it becoming dark the columns moved forward to the assault ; there-upon the following unexpected event happened : the general reserve, according to orders, should have followed the centre column, but the latter, having inclined to the right of its proper direction, debouched on the left flank field-work, which it attacked almost simultaneously with the right column ; the general reserve, following at the ordered distance from the centre column, and not observing its change of direction, marched straight on, and quite unexpectedly found itself right in front of the centre field-work, against which it at once advanced to the attack.

As soon as fire was opened by the right flank of the defenders, the two horse-artillery guns, which had been sent with one-and-a-half squadron to turn the enemy's right flank, opened on the flank and rear of the position from the heights commanding it. Although the movement of the turning column was observed by the outposts of the defenders, yet the latter were unable to take timely measures to oppose the movement, since in the dark the squadron stationed in reserve on the left flank could not be found, and was only discovered when the troops had commenced a general retreat.

The left column of assault, whilst on its march, was suddenly fired on by a company of the defenders which had taken up a position in front of its line of works on a height adjoining the right flank of the defence.

This circumstance compelled the column to halt for a time ; but the commander, considering that the chief aim of the column was to attack the field-work, decided to leave a party of troops from the local reserve to oppose the enemy who had suddenly fired on them on the march, and continued his advance to fulfil the mission committed to him.

As regards the action of the artillery, it may be remarked that its rôle for the defence was very limited ; after firing a few rounds, it was obliged to withdraw to avoid exposing itself needlessly to the danger of being captured. It was only ordered to open fire at a very short range when the enemy became visible ; firing in the direction of the noise of their advance, as is recommended by some, could not be practised, as the enemy approached so quietly that his presence only became manifest when he appeared in sight. The attack did not bring the field artillery into action, and it remained with the general reserve until the columns had taken the field-works. On these being captured, the guns were sent forward to the line of defence, to fire on the retreating enemy, and to repulse him if he should determine to return to the assault.

The second night manœuvres were undertaken for practice in marching, in outpost duty, in night fighting by moonlight, and, above all, for practice in reconnoitring by night.

A project was given in accordance with the above, and a night chosen

for these manœuvres, when the moon rose, about 12 o'clock, so that the march and reconnaissance might be made in the dark, and the movements in fighting formation by moonlight. In the problem for the attack only the general direction of the enemy's movements was indicated, and the points where his reconnoitring parties had been seen the previous evening, but his actual position and his strength were left for the cavalry to discover. Similarly the defence were only informed of the general direction whence the enemy might be expected, and the points where his advanced guard had been observed during the day.

All the troops in the camp of exercise took part in these manœuvres, but steps were taken to prevent one side from knowing exactly the strength of its opponents. The troops were brought on to the ground selected for the manœuvres at dusk. The two sides were placed at a distance of about seven miles apart. The ground chosen was in the immediate neighbourhood of the camp, and therefore well known.

On its getting dark strong reconnoitring parties were sent out by the attack to discover the position and strength of the enemy; they were ordered not only to break through the enemy's covering parties, but also through his line of outposts.

The order of march of the attack was in one column, the intervals between the units being decreased; the patrols marched nearer the troops, they covered them in the daytime and screened not only the advanced guard but also the head of the main column; the artillery, except four guns detailed for the advanced guard, and the cavalry marched at the rear of the main body.

The reconnoitring parties obtained the most accurate information of the position of the defenders and of their approximate strength. One party even broke in on the rear of the bivouac of the main body and fell quite unexpectedly on the cavalry bivouacked separately in rear of the infantry.

The change of formation from the order of march to the order of battle was effected at about $1\frac{1}{4}$ miles from the position without noise and in perfect order, the moon which had just begun to rise assisting the movement. Each fraction was formed at reduced distance and interval. All the artillery, except one battery which accompanied the fighting line, was placed in rear on a position previously selected to oppose the enemy in case of an unsuccessful issue to the fight; an infantry escort was left with it.

The defenders took up a position having a slight inclination towards the point of probable attack. The artillery were placed on the crest; the first line was extended at about 200 paces in front of the artillery, but not so as to mask their fire—the second line also of companies in extended order being on the crest itself on either side of the artillery. The general reserve in rear of the fighting lines, on the reverse slope of the hill at 500 paces from the second line. The cavalry were employed partly on reconnoitring duty, the remainder being posted on the flanks of the fighting line. Until the receipt of reliable information of the enemy's attack all the troops, except those detailed for daily routine and for outpost duty, remained in bivouac, taking the usual

measures for defence. Before it became dark all the detachments were shown their places in the position and the approaches to them.

Timely information was received of the attack of the enemy, and the occupation of the position was accomplished without confusion and in an orderly manner. The hostile columns, in spite of there being a full moon, were only perceived from the height at a distance of 300 paces. It is true that long before the actual appearance of the enemy a dark object was observed in the direction of their advance, resembling motionless phantoms or earth trenches just thrown up, rather than columns of troops, appearing for a short time, disappearing, and again reappearing. It afterwards proved that these shades were slowly moving columns of men in uniform. The troops of the defence, who wore great-coats, were not seen at all by the attackers, although they were placed on the high ground.

The assaulting columns were received at first by company volleys from the first line ; afterwards the artillery opened fire and the companies in the second line.

When the attack was fully developed and the measures for the defence of the position had been clearly disclosed, the manœuvres were brought to a close. On verifying on the spot the dispositions of the attacking force for the storming of the position, it transpired, among other points, that the general reserve detailed to support the right flank, by which the main attack was to have been made, through taking a wrong direction found itself at the moment of the assault not on the right flank, but on the left, with a portion of its troops already engaged in the fighting line.

We have written an account of these two manœuvres not with a view of dogmatising on them, but with the intention of showing that even in peace exercises of night operations many kinds of difficulties, accidents and misunderstandings, more or less serious, occur, the consequences of which might be considerably mitigated by a careful study of all the circumstances attending these difficulties, accidents and misunderstandings. Let us then study in peace time that which may happen in actual war, where the victory rests with him who is the best prepared.

Y A. K E.

SOME REMARKS ON THE ADVISABILITY OF ARMING TROOPS WITH REPEATING RIFLES.

By COLONEL W. LUCKHARDT, C.B.

THE advisability of the introduction of repeating rifles forms the foremost military question of the day, and it may be considered of interest to our readers to have placed before them this subject, as it stands at present, and to couple therewith certain remarks on the subject as connected with our own army.

To the French army, restless as it is in its desires to find revenge for its defeats, to reconquer its lost provinces, and to occupy once more the most prominent place, appertains naturally the privilege of having paid special attention to this subject, since it promises the realization of the aspirations we have adverted upon. So late back as 1878 we find therefore a repeating rifle named after its inventor "Kropatschek," issued to its Marine Infantry. Opportunities soon occurred to submit this weapon to a practical trial, and at the occupation of Sfax, and in the fighting in Madagascar, it was reported upon in very favorable terms. In consequence of these successful reports a more extended trial was decided upon, and it was therefore ordered that a portion of the line troops, destined for Tonking, were to take this weapon with them. However, on this occasion, the favorable results before attained were not confirmed. Three battalions of a Zouave Regiment, which, under command of Lieutenant-Colonel Collet, participated in this expedition, found considerable fault with this weapon. The complaints preferred against it found expression in an article which was published in the "*France Militaire*" and runs as follows: "Officers and men express themselves in a very dissatisfied way about the 'Kropatschek' rifle, upon which hitherto such universal praise has been bestowed. This rifle is stated to weigh one kilogram (about two pounds English weight) more than the Chassepot-Gras-Rifle. This difference of extra burden caused in the long marches considerable additional fatigue to the men. Besides its working is reported to be very irregular, necessitating continual attention, and its mechanism is of such a complicated construction that the manipulation of taking the rifle to pieces, and putting it together again, requires a considerably longer time than with the Chassepot-Gras-Rifle. This disadvantage presents a serious drawback against its adoption." The author here takes occasion to point out how pregnant with disaster such defects might prove to an army. As an instance of note, he recalls to recollection the battle of Beaumont, on the morning of which the Commander had issued orders to clean the rifles, and the army found itself attacked whilst employed in this unlucky operation. To the delay and confusion which occurred in getting the rifles put together again, the loss of this battle is generally attributed. The article then runs on as follows:—

"Besides the defects above pointed out, complaints are made that the rifle was found far behind the Chassepot in its effective range of

fire. In addition, moreover, to these technical defects the experience gained goes to show that for offensive purposes these repeating rifles are practically useless. For the future therefore the use of these weapons should be abstained from in a Colonial war which, by reason of its conditions, renders nearly always the adoption of the attack obligatory." In conclusion, the author expresses the opinion that the deductions to be derived from this show that it would be a mistake to introduce these repeating rifles into the French Army, since by reason of its adoption the latter would have to restrict itself to defensive tactics whilst the principal had received general recognition that only the attack could lead to victory.

However the opinions, thus expressed, did not gain acceptance, the more so that meanwhile considerable progress had been made in remedying the technical defects which had prejudiced the men against its adoption. The present position is laid before us in an article which appeared in the "Republique Française" towards the end of last year, and which runs as follows: "The new Army Budget for the German Empire is now known, and no special credit is demanded in it for the introduction of a repeating rifle. We are well aware that our neighbours have the command of a very considerable amount of money at their disposal which France has chiefly furnished by means of its war contribution. This amount, however, can only be touched by an order of the Emperor, and is exclusively reserved to meet the demands of a sudden mobilization in order to avoid the slow procedure of a loan. It is obvious that the purpose for which it is therefore maintained is of too much importance to allow of the Prussian staff submitting any proposals for its employment in any other way. To alter the Mauser Rifle into a repeating one would necessitate a change in about 8 million weapons. Such a procedure would involve an expenditure of about 140 millions if the present rifles are made use of, and of more than 200 millions if it was decided to construct entirely new ones. Whatever decision may be arrived at, it is clear that Parliament would have to be resorted to to find the necessary funds. We can conclude, therefore, that Germany means to adhere for the next year to the present *status quo*. However, this decision should not induce us to discontinue the experiments which we commenced three years ago. We are just about to give these experiments a wider range by trials on a larger scale which are intended to be made in our Rifle Battalions with a Gras Rifle of the authorized model of 1874, to which a repeating apparatus has been affixed, similar to that of the Kropatschek. The latter weapon, which has now been in use since 1878 in our Marine, has proved itself a serviceable one at Sfax, Bachink in Formosa, and lately in Madagascar. We are, therefore, justified in fixing upon this weapon as a basis on which to make further experiments, and especially so, since Germany has made trials with a repeating mechanism for their Mauser Rifle. One hundred rifles constructed in the above manner at Chatellereault have been issued to each of our 24 Rifle Battalions. The 1st, 2nd and 3rd Zouave Regiment are already in possession of 1,000 of these rifles each, which were issued to them a year ago by

order of the Minister for War for their Expedition Battalions. There were, besides the above, 3,000 rifles of the same model in the Field Park at Tongking which, it is presumed, General de Courcy has had issued. Very satisfactory reports have been received from the Zouave Regiments regarding this weapon after the fighting at Hue and the battles at Hong Hoa. We are therefore justified in the conclusion that the results which will be obtained from the trials now about to take place will still further confirm the good opinion which has been formed of it. It is, therefore, possible that the year 1886 may yield decisive results regarding the future armament of our troops. Whatever decision may be arrived at, whether it is considered advisable to retain our present calibre of 11 millimetre with a repeating apparatus affixed to it, or whether we shall prefer to alter it, in consequence of the results obtained in Switzerland, to a 9 or even 8 millimetre calibre, we shall be in a position to execute whatever change may be decided upon, on the day on which Germany commences to modify its present armament. Our small arms manufactories are ready with material and machinery to carry out the necessary alterations, and it is believed that it will be feasible without excessive costs to turn the Gras Rifle into a repeating one. We do not under-estimate in any way the burden which will arise to our budget from such a measure, but we feel certain that the representatives of the country will accord willingly the necessary funds, directly it is clear that the security of France demands it. As soon as our neighbours begin, we shall proceed at the same time to take action in the matter, and our officers express themselves assured that the rifle, as turned out at Chatellerault, is a preferable one to the Mauser as well as to the different repeating rifles which were submitted to trials in our Imperial Guard.* We observe from the above that the present question under consideration devolves itself practically into a dual one, since not alone the modification of a repeating rifle is under consideration, but also the advisability of altering the present rifle into one of a lesser calibre.

Although the latter subject does not strictly appertain to the lines within which this article was intended to be kept, a digression on this point may be permissible, since such a discussion converges to a great

* From the following quotation from the French and German Press (dated August 1886) it appears that both the French and German armies will ere long be armed entirely with Magazine Rifles:—"According to the Berlin official organ, the *Post*, a resolution of the German War Minister has been issued regarding the supply of Magazine Rifles to the 11th, 7th, and 8th Army Corps of the German Army. At first these rifles will only be served out to the 1st Brigades of each division of the named Army Corps, but it is supposed that, by the spring of 1887, the whole of the Infantry of the German Army will be furnished with Magazine Rifles.

"By the same period, too, the issue of Magazine Rifles to the French Army will be completed, and the *Progrès Militaire* assures us that the French Magazine Rifle of the '1885 pattern' leaves nothing to be desired. Its mechanism is extremely simple, and at recent experiments with it at the Camp at Chalons all the officers present were very satisfied both with the accuracy and the rapidity of the fire from the newly introduced Rifle, as also with the great penetration of the bullet even at a distance of 1,800 metres."—*Secy., U. S. I.*

extent with the matter we have under examination, *viz.*, "What is the best rifle?" There exists at present very little disparity in the rifles in use with the several European armies, since the difference in their calibre is very trifling, ranging from 10×4 millimetre (Italy and Switzerland) to the 11×47 millimetre of our Henry-Martini Rifle. All attempts to improve these weapons by attaining a longer range combined with a low trajectory were found to demand an augmentation in the powder charge, to obtain a greater initial velocity, and an increase in the weight of the bullet, to give it more power of resistance to the air in its flight. Favorable results obtained in this direction were, however, found to create on the other hand disadvantages of a very serious nature. The augmentation in the weight of the cartridge rendered necessary the disagreeable choice between either increasing the burden of the man or lessening the number of cartridges hitherto carried by him. The additional weight of the bullet was found to increase largely the force of recoil, and at the same time to lessen the correctness of the flight of the bullet. In recognition of these facts Major Rubin, of the Swiss Army, Director of the Swiss Laboratory at Thun, commenced in 1878 experiments with rifles of a lesser calibre which yielded very satisfactory results. These trials made with rifles of 9 millimetre, 8.5 millimetre, 8 millimetre and 7.5 millimetre have shown that the greatest advantages are obtainable with a calibre of 8 millimetre. We have pointed out above that these experiments have received recognition in the French army since it is stated in the article we quoted that, should action be taken to introduce a repeating weapon, a change of calibre to 9 millimetre or 8 millimetre would be combined therewith. As regards Germany, we have shown the tremendous expenditure which would be involved by any change in its armament. When a measure demands such enormous funds for its realization, it is apparent that even the conviction that it is advisable is not always sufficient to cause its adoption. The fact that the German army has recognized the importance of a repeating rifle is clear from the different trials which were made to attach such an apparatus to the Mauser Rifle. This procedure had, however, to be abandoned as all such arrangements were found to be unsuitable. In the same manner Major Rubin's results have by no means escaped attention as may be observed from an article which appeared in the "Internationale Revue," in which the writer expresses himself as follows on this subject:—

"Whatever technical progress may be made in weapons by new systems, which appear to spring up like mushrooms after a spring rain, the truth of the fact will ever remain unalterable, that troops excellently trained, well led, and possessed of an iron discipline, will be able to attain better results even with an inferior weapon than troops who are armed with the best weapon ever invented, but who are deficient in any of the qualities above mentioned." We allow that excellent material may prove a great consolation under such circumstances, but it is apparent that to deduce from this an argument *à priori*, that the superiority of a weapon is not a matter of primary consideration, is fallacious.

Allowing, however, this consideration to stand to a certain extent, it is evident that there must be a narrow boundary even to such confidence. At all events, it appears decidedly to be a safer plan to make certain allowances for human weakness. It seems to us more than probable that the results of the most perfect training will disappear like chaff before the wind, when the man finds himself deceived in the weapon in which he was taught to place implicit confidence.

Training can supplement the natural faculties of a man, to make the most of his weapon, and to instil into him that circumspection which teaches him to use every little advantage which offers itself, when he acts individually, and has to depend upon himself, but it can never be expected to make a man forget in the face of a superior weapon the defects of a weapon which clearly manifest themselves by the casualties around him.

With regard to the objections raised against a repeating rifle, it is apparent that both our material and training would instil us with very little confidence if we confessed ourselves afraid to trust them with a rifle perfect in celerity of fire, because its good qualities might be perverted into disadvantageous ones by the men denuding themselves of ammunition in a most reckless manner.

Similar fears were expressed in the matter of the breech-loader when its introduction was under consideration. But when the great trial of breech-loader *versus* muzzle-loader took place in the war of 1866, the results showed that exactly opposite conditions took place: the expenditure of ammunition being considerably less in the case of the breech-loader than of the muzzle-loader. It is only logical that it should happen thus; for while the perfect confidence in his rifle must animate a man to taking careful aim and obtaining the full benefits of its advantages, an inferior weapon must always tempt a man to a reckless use of it in the vain attempt to place it on a par with the superior one. The same campaign, moreover, proved the fallacy of the argument that an army with a superior weapon must necessarily restrict itself to defensive tactics, since these offer the best opportunity to reap the full benefit of its good qualities, whilst they minimize at the same time the danger of the men denuding themselves of ammunition. There are situations on modern battle fields, such for instance as when the last rush is made in the attack of an enemy's position when a perfect hail of bullets, such as only a repeating rifle will yield, may considerably advance the prospect of a successful result. As regards the difficult question of replenishment of ammunition, we would observe that we are in this respect much better off than any other army, as our transport pack mules are eminently suitable to enable this work to be efficiently carried out.

In conclusion, we wish to point out that an army constituted like ours, maintained by voluntary enlistment, and therefore numerically weak, but always on "Vedette" and more or less constantly engaged in warfare, would appear to be entitled beyond dispute to the best weapon which can be produced. As far as technical difficulties are concerned, England has hitherto claimed the privilege of prominence in overcoming these, but to give these qualities a fair development, so far as army requirements

are concerned, it appears necessary that the State should offer liberal inducements. The necessity of a reform in our present armament is obvious, since the rifle with which our native army is chiefly armed is quite obsolete, whilst that of our European army, although on terms of equality with those in other armies, is not the weapon it should be armed with under the considerations we have advanced.

NOTES ON A NEW FIELD KITCHEN.

BY CAPTAIN J. C. BAXTER, R.E.

I PROPOSE in this article to give a description of a new kind of cooking apparatus, or field kitchen, which I have designed specially for the use of troops on active service or in camp. At the present time, when troops arrive at their camping ground, tired, hungry and often drenched with rain, there are no means of cooking their rations quickly, or of making tea, coffee, cocoa or grog, except in the ordinary service camp kettles over an open fire.

Those who have been on active service are well aware of the difficulty of making a fire burn in wet weather on the open ground; and as it is during wet and cold weather that properly cooked meals and hot drinks are most necessary to keep the soldier in good health, the advantage of a simple, portable, efficient, and inexpensive cooking apparatus is apparent.

A field kitchen of the regulation pattern requires from four to eight hours to construct, besides clay, brushwood, tools, and skilled labour, but the apparatus now submitted for trial can be set up in a few minutes, and will cook for from 100 men to 120 men in any weather, with a consumption of 16lbs. of wood only.

So troublesome are the regulation kitchens to construct that it is not considered worth while to make one, unless troops remain more than one night in the same camp, and consequently, when troops are on the march, *i.e.*, when they most require properly cooked food, they are often obliged to turn into their wet tents, and lie on the damp ground without a hot meal or drink.

The sick list is consequently greatly increased, and the efficiency of the army much reduced.

The apparatus consists of five annular cooking pots or camp kettles, which are issued instead of the ordinary Flanders or other camp kettles. These five annular pots or kettles are placed one upon another, as shewn in Fig. I, and the fire lighted inside, a small hole in the ground being first made to serve as an ashpit. Should the ground be very hard, or very sandy, pieces of brick, stone, turf, or clay may be placed under the lowest pot, so that air may enter beneath, see Fig. V. The fire being lighted in the central space or flue, a rapid draught is produced, and the fire completely protected from the weather.

A light iron stand, which packs inside one of the pots, is placed upon the fifth or top annular kettle, and upon this an ordinary service kettle or a frying pan or gridiron may be placed. This sixth pot or kettle prevents rain from falling on the fire, and at the same time enables the existing supply of camp kettles to be made use of.

By removing the iron stand, and placing the Flanders or other kettle on the top annular pot, so as to cover, or partly cover, the

central opening, it can be used as a damper to regulate the draught. The pots, being filled with meat, vegetables, and water, can be set up in a few minutes by the most inexperienced person, and the fire lighted. Fuel, cut into pieces about 8 to 12 inches long, must be put in at the top, and the fire box or flue *must be filled quite up* for 30 or 40 minutes, and during this time a good flame should come out at the top.

If this is properly attended to, the water in the pots will boil in from 25 to 30 minutes, and, after boiling for 10 to 15 minutes, the orifice at the top should be closed, or almost closed, by means of the Flanders or other ordinary kettle, or by a piece of turf, tile, or other convenient substance.

The heat from the glowing embers inside the apparatus will then complete the cooking, and will, moreover, keep the food hot for several hours if necessary.

It is obvious that this apparatus can be constructed of any dimensions within certain limits, but properly speaking there is no apparatus at all, the principle of the invention being to form the cooking pots in such a manner that they of themselves form the field kitchen, and nothing more is required than to make a small hole in the ground. The iron stand and the grate, supplied with the apparatus, although convenient, can easily be dispensed with.

The pots now forwarded are 16 inches external diameter, 8 inches internal, and 8 inches deep, and will cook for 20 men. The five pots will therefore cook for 100 men, and if the Flanders kettle on the top be also used for cooking rations, for 120 men.

The apparatus is, however, intended to cook for one company of 100 men, the Flanders kettle being used for making tea, coffee or cocoa.

The reasons for selecting the above dimensions are—

1st.—16 inches external diameter does not make the pot too heavy or inconvenient to carry.

2nd.—8 inches the internal diameter is a reasonable size to light a fire in.

3rd.—8 inches the depth makes the cubic content 1,152 cubic inches, or about the same as that of the service Flanders kettle, which will cook for 20 men.

Should a company be divided into detachments, one, two, three, four, or five of the pots may be taken, and will answer the purpose equally well.

Several trials of this field kitchen have been made at the works of Messrs. Adams and Son, Haymarket, London (the makers of the Warren's cooking apparatus used in barracks), and it was found that the cooking was completed in rather less than one hour, with an expenditure of 16lbs. of wood only, being an average of $2\frac{1}{2}$ ounces of fuel per man.

In localities where fuel is scarce this is a matter of great importance. Any fuel can be used—wood, coal, coke, straw, dead leaves, or dried dung.

The rapidity with which the fire can be made to "draw" is also a great advantage, when there is little time to cook, and no wind.

It is considered most important that, before starting on their morning

march, that troops should, if possible, be provided with a cup of hot tea, coffee or cocoa, and the field kitchen now forwarded is especially suited for this purpose, as it will raise 24 gallons of water to the boiling point in less than half an hour.

When troops are on the march, the pots can be carried in or hung beneath a wagon, or they can be packed on oxen, mules, ponies, or camels. By means of the handle, also, a man can carry one comfortably over his shoulder. There is no danger of the kitchen being blown over by a high wind, as it weighs when full 240lbs.

In the trials made in England, it was found desirable to separate the lowest kettle from the second, and also the second from the third, by means of small pieces of tile, turf, clay, stone, or wood, for the following reasons :

1st.—A better supply of air is admitted to the fire.

2nd.—The in-rushing cold air cools the two lower kettles, and prevents the cooking being too rapid.

3rd.—The fire can be inspected and stirred through the apertures. Should a dense or compact fuel be used, such as coke, dried dung, or saw-dust, all the kettles should be separated in order that a good supply of air may enter.

If considered necessary, all the pots might be formed with bosses or feet on the bottom, and recesses in the lids, so that, when the feet were placed in the recesses, there would be no space between the pots ; but when turned so that the feet rested on the flat portion of the lid, there would be a small space of about $\frac{1}{4}$ to $\frac{1}{2}$ inch.—See Fig. VIII.

It is, however, considered that the pots can be easily separated, as may be desired, by means of pieces of any convenient substance, as tile, turf, or wood.

A few small holes are made on the outside of each pot, about $\frac{1}{4}$ inch from the edge, in order that steam and any water boiling over may escape to the outside and not into the fire.

A hole about $\frac{1}{2}$ inch diameter will also be found in each lid.

This is to allow water to be poured into the pots while the cooking is going on.

In order that these holes may be accessible, the pots, when built up to form the kitchen, must be placed slightly to either side alternately as shewn in Figs. I and III. By this means, also, the flame and heated air are deflected from side to side, and the water in the pots is found to be more rapidly heated. The fuel, also, is retained towards the upper part by the steps or ledges so formed.

A small iron grate with a handle, see Fig. VII, similar to an ordinary gridiron, is also supplied. By placing this grate between any two of the annular pots, the fire may be kept towards the upper part of the apparatus, should the lower pots become heated too soon. This grate is, however, not really necessary, and was made for experimental purposes only. It can always be used for cooking chops or steaks over the top of the kitchen, as soon as the fire becomes clear. When using wood for fuel, a grate of any kind was found unnecessary, but with very compact fuels it might be of advantage.

A circular plate of iron, 8 inches diameter and $\frac{1}{4}$ inch thick, pierced with numerous holes 1 inch in diameter, may also be used for a grate, and can be made to fit inside the central opening of the lowest annular pot, resting on a rim or on three studs which could be formed there, see Fig. IX. Larger pots, say 18 inches external diameter, 9 inches internal diameter, and 9 inches deep, to cook for 30 men might be used; or smaller ones, 12 inches external diameter, 6 inches internal diameter, and 6 inches deep, to cook for 8 men; in fact, the dimensions can be varied to any extent. It is thought, however, that those selected are most suitable for field service.

When issuing these field kitchens from store, one Flanders or other kettle, one iron stand, and one grate, would be served out to every five annular kettles or pots; but it must be distinctly understood that the five, or any less number of annular pots, will form an efficient kitchen of themselves, and that the Flanders kettle, the iron stand, and the iron grate, have only been added for the reasons already given.

The annular cooking pots are made of stout tin plate, seamed and soldered, but they could be made of thin sheet iron or steel, rivetted and brazed, or of any other material considered more suitable. Each pot is provided with a handle by which it may be carried, and it has also two loops or rings on each side, through which sticks may be passed, so that, when full, it may be carried by two men without fear of overturning.

Although specially designed for field service, this kitchen could be used with great advantage in barracks for the following reasons:—

- (1.) Great economy in first cost and repairs.
- (2.) The great facility with which it can be cleaned.
- (3.) The dinners could be taken direct to the barrack-rooms in the pots in which they were cooked, instead of being spoilt by being carried long distances in the open air in open dishes.
- (4.) Economy of fuel, as coke, wood, and other cheap fuels could be used.

Of course, ovens would be required in addition for baking.

The following is a summary of the advantages claimed for this cooking apparatus for field service:—

- (1.) It can be set up in a few minutes, and the cooking commenced without delay.
- (2.) It will cook in any weather, as the fire is completely protected from rain, and the rapid draught created renders it independent of the direction of the wind.
- (3.) Any kind of fuel can be used in it.
- (4.) Great economy of fuel, $2\frac{1}{2}$ ounces of wood per man only being required.
- (5.) Great simplicity, as the pots themselves form the apparatus, a small hole in the ground only being required.
- (6.) It can be divided into parts for detachments.
- (7.) It is very portable and cannot get out of order.
- (8.) It is very strong, the annular pots being as strong, if not stronger, than the ordinary service pots.

- (9.) It can be made at a cheap rate.
- (10.) It can be easily cleaned.
- (11.) It will cook or heat water very rapidly.
- (12.) It will keep the dinners hot for a long time without any extra expenditure of fuel.

The makers of the apparatus are MESSRS. ADAMS & SON, *Haymarket, London, W.*, from whom any number of these field-kitchens can be procured, and who will send to India as soon as possible another field-kitchen, of such dimensions as may be considered suitable for use in India.

These annular pots also appear to be well suited for the use of the Natives, as, instead of placing them one upon another, they could be used separately, a small fire being lighted inside each pot.

This field kitchen is, however, chiefly intended for European soldiers, as it would probably be difficult to induce the Natives to make any change in their present method of cooking.

P.S.—The fuel should be put well up to the top for the first 40 or 50 minutes. After that the top can be almost shut, and the food allowed to stew gently for 15 or 20 minutes. The ashpit, whether a hole or of bricks, must not be more than 8 inches wide. For convenience of transport, especially Indian transport, it has been suggested that the pots should fit into each other, *i.e.* one inside the other from top to bottom. This could be done by dispensing with the iron rings, which are not very important.

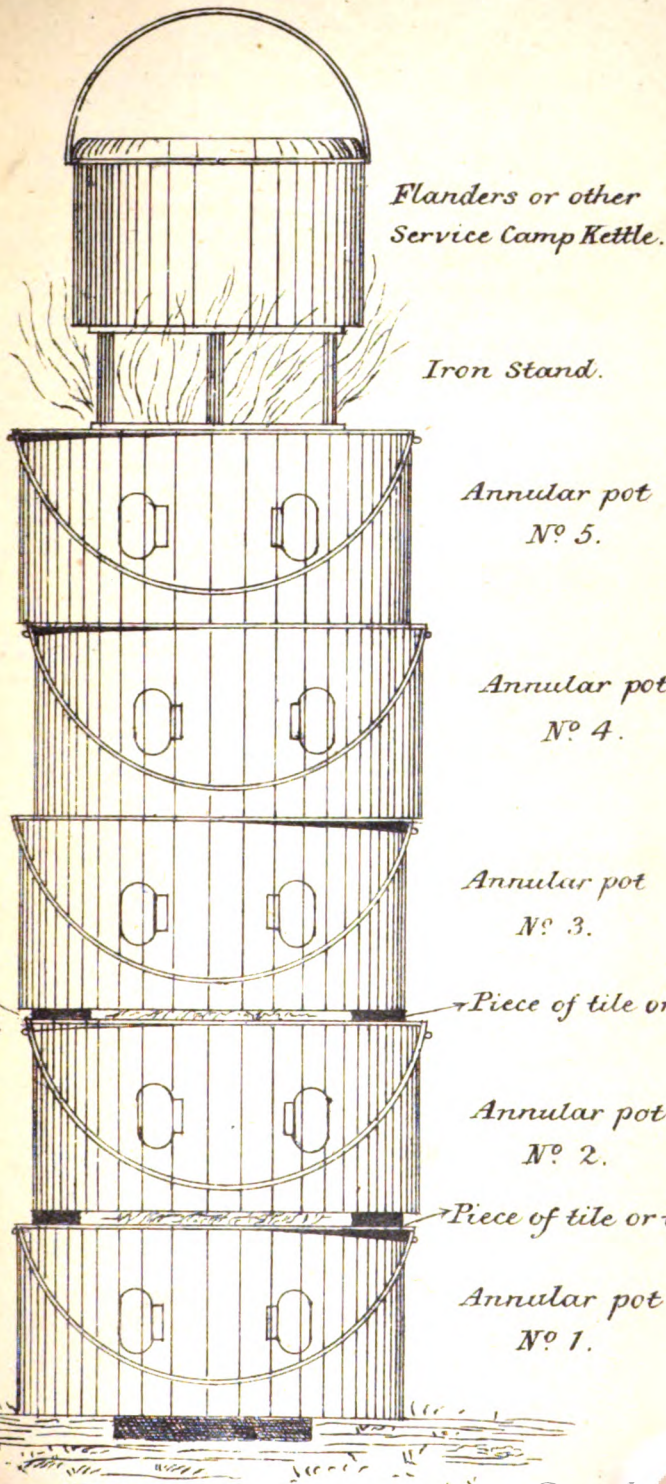
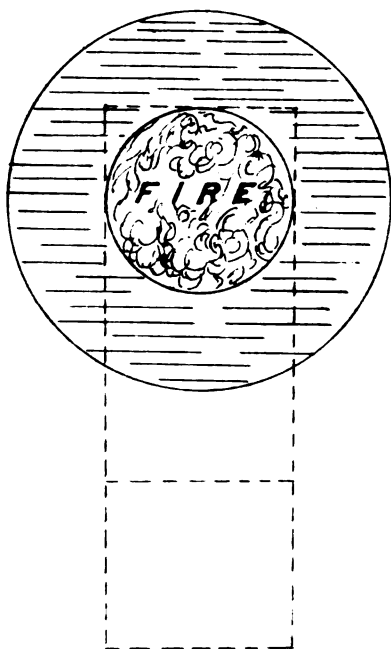


Fig. I.

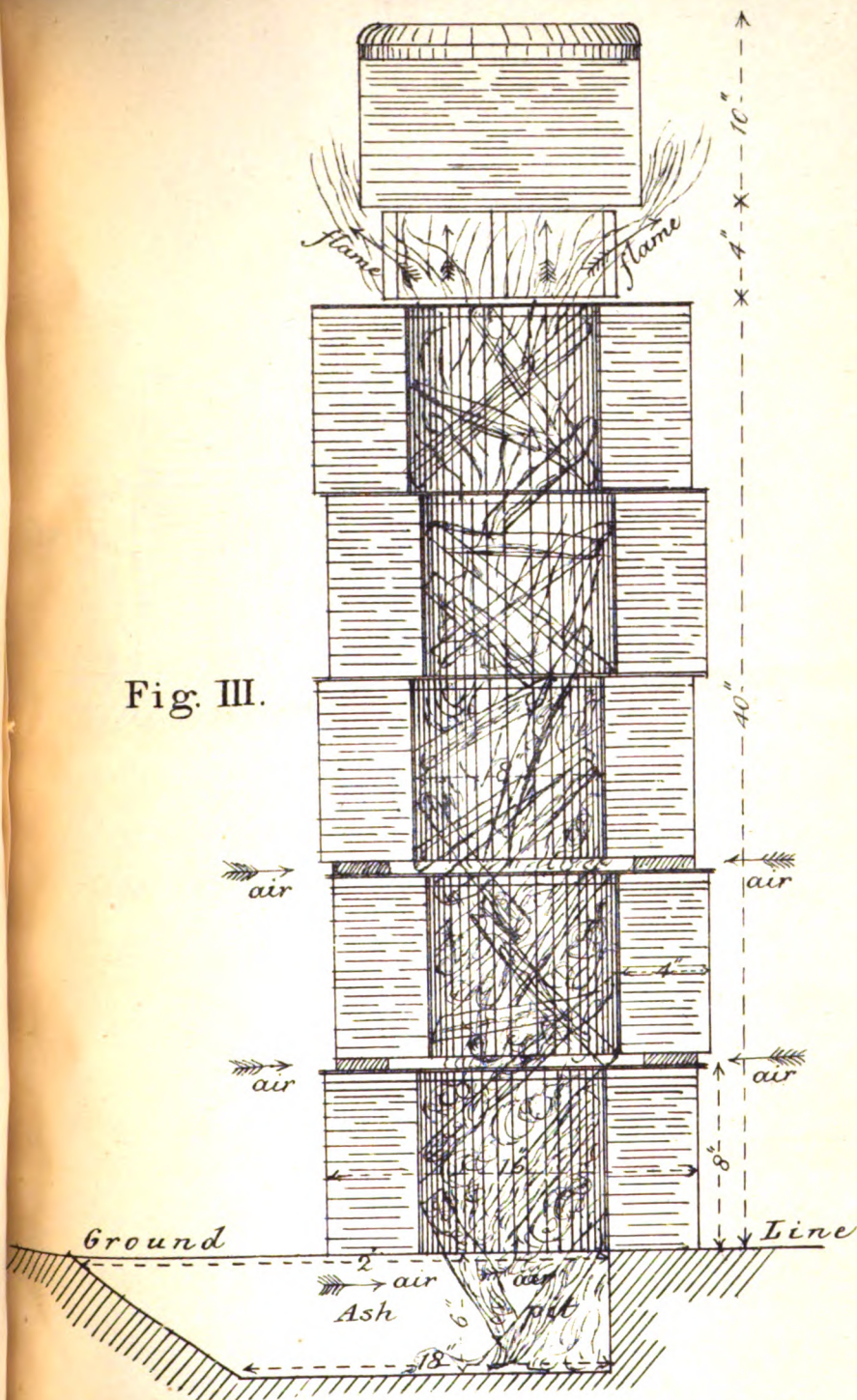
Elevation of Field Kitchen.

Fig. II.

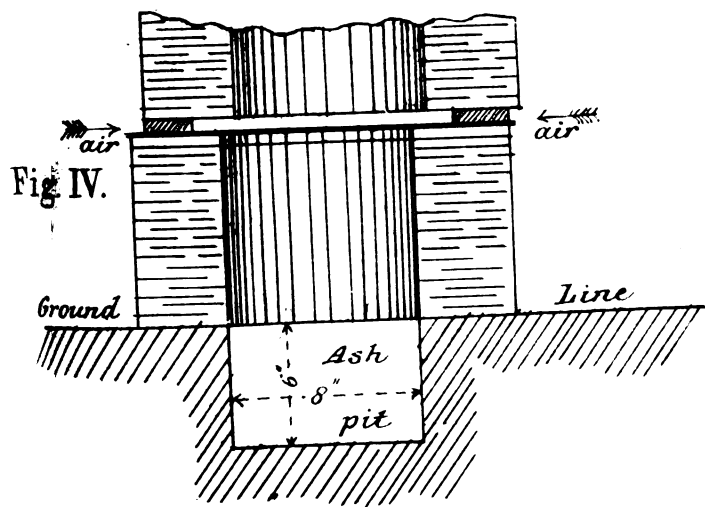


*Plan of Field Kitchen
shewing plan of ash pit
in dotted lines.*

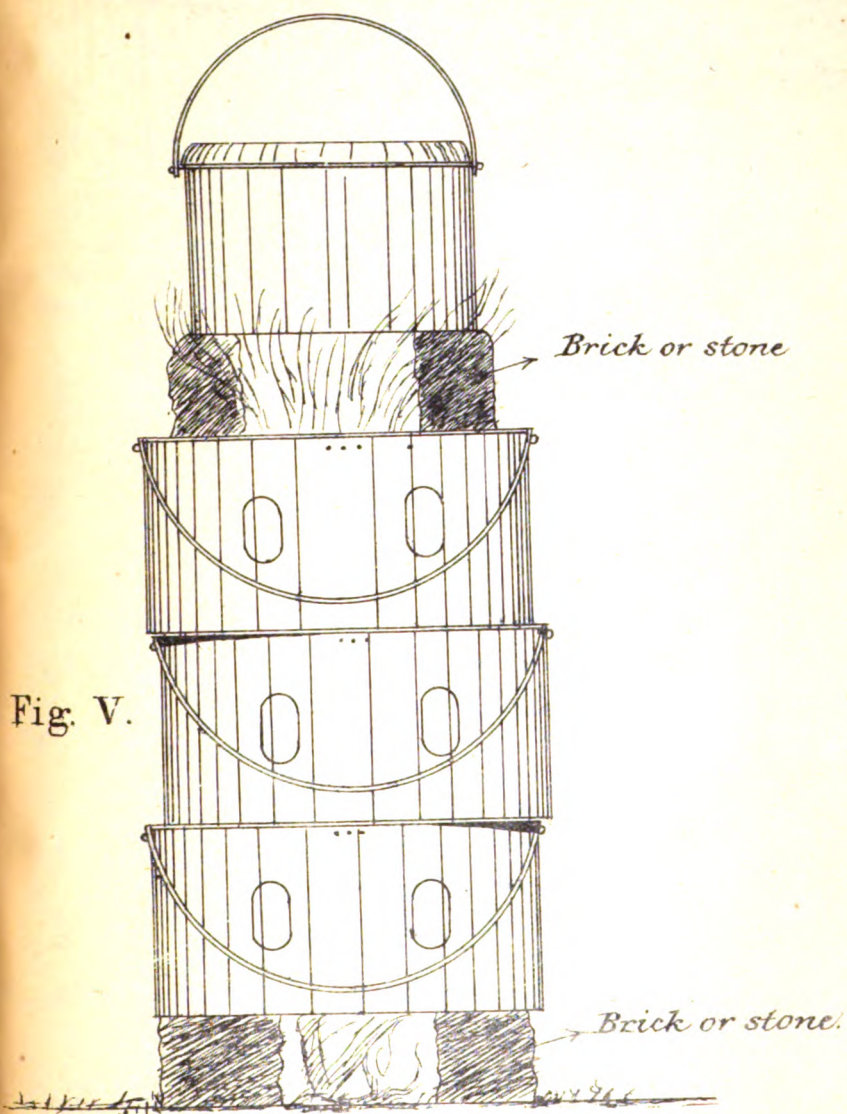
Fig. III.



Section of Field Kitchen of 5 annular pots, shewing also longitudinal section of hole for ash pit. - The sloping end is to enable the ashes to be raked out. The (wood) is shewn inside.

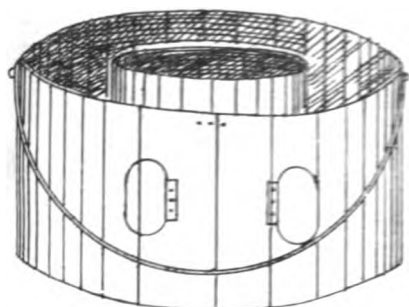


Cross section of hole for ash pit.



*Elevation of Field Kitchen with 3 annular pots only,
and bricks or stones instead of iron stand and hole
for ash pit.*

ig. VI.

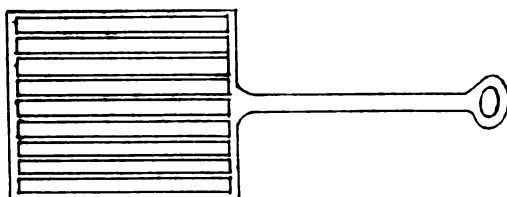


Note.

*A tin Canister 8' by 8' dia.
meter for tea, coffee etc.
can be fitted into the cen-
tral tube when travelling,
to economise space.*

*View of one annular pot
without lid shewing central
opening - or tube for fire.*

Fig. VII.



Moveable Iron Grate can also be used as a gridiron.

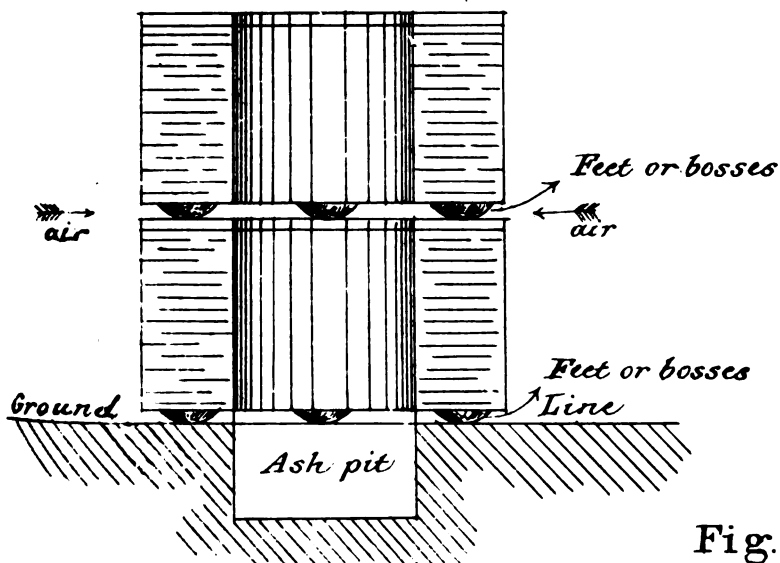
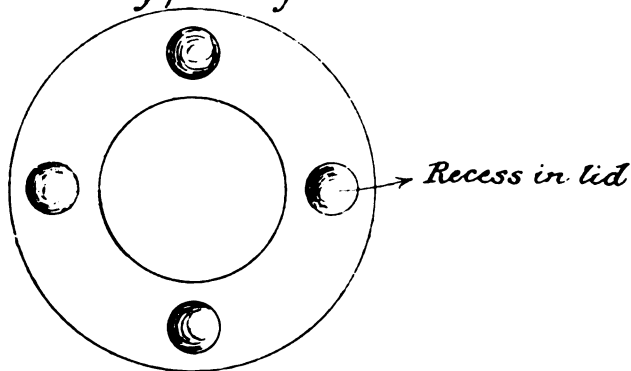


Fig. VIII.

Section shewing feet or bosses to separate pots instead of pieces of tile.



Plan of pot shewing recesses in lid for feet or bosses to fit into when no air is required to pass between the pots.

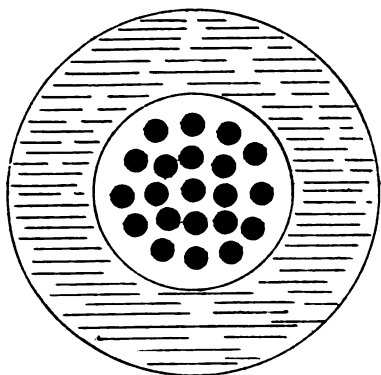
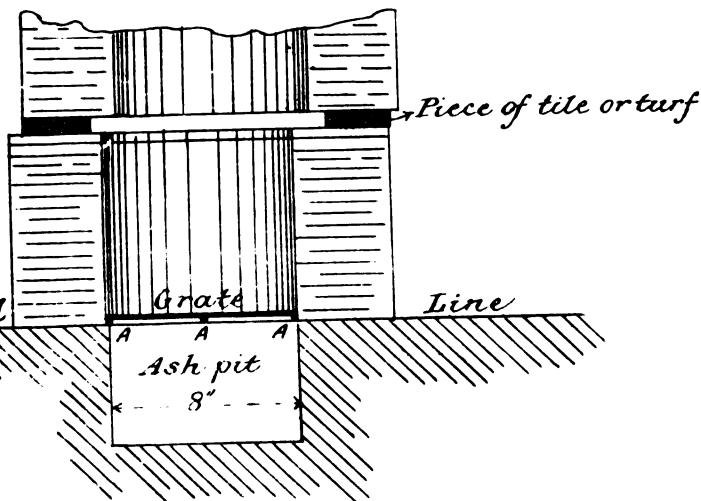


Fig. IX.

*Plan of Kettle shewing
round iron plate with
holes for grate.*



*Section shewing round iron
plate with holes for grate.*

*Note. If a round iron plate be used for a grate as
seen in the sketch all the pots must be made with a
light rim or projection or three small studs at A. A. A.
support the grate. Any pot can then be used at the bottom.*

NATIVE MOUNTED INFANTRY.

By LIEUTENANT G. J. YOUNGHUSBAND,

Queen's Own Corps of Guides.

INTRODUCTION.

ALTHOUGH much has been said, and much written, about Mounted Infantry,—and though in its main principles it is warmly supported by men who have served with, or had experience of, that branch of service in the field,—yet no steps have been taken to raise a small permanent body of Mounted Infantry in time of peace—a body which could be severely tested in some of our small border wars, and if it succeeded—and it certainly would under young officers of energy and experience—could be augmented as much as the occasion required. In three of our recent campaigns Mounted Infantry have been tried, and each time they have been brought to grief by the same thing—sorebacks—and sorebacks mean *inexperience*.

On each occasion history has repeated itself. The General finds that there is not sufficient cavalry, or that it is unsuitable to the country, or inefficient; and thereupon raises a regiment of Mounted Infantry.

Volunteers are called for from regiments; ponies are collected; the former being put on top of the latter, our regiment of Mounted Infantry is sent into the field. Now every cavalry officer knows that what constant, and unremitting, care is required at starting on each or campaign—even with trained riders in the saddle—to avoid sorebacks. Imagine, then, the fearful havoc which 100 infantry men on a few of 100 ponies' backs in a fortnight. In the Soudan I saw 60 men on backs in one company at the end of a fortnight. And yet, though the men could not ride, though nearly all the ponies had sorebacks, though the saddlery and harness was made for big horses, yet, in spite of all these drawbacks, they did right good yeoman service, and with dash, and thoroughly workmanlike vigour, were far more useful to the army than dangerous to the enemy, than many mounted Corps which had all the advantages of equipment, discipline, experience in horsemanship, and horse management. I am convinced that that same body of men, with a year's training, could have been made into the most formidable body of fighting men that we have in our army. In a year they could have been taught to ride, suitable saddlery would have been supplied to them, and they would have learnt how to overcome their physical weakness—sorebacks. In Burmah a regiment of Mounted Infantry was now (July 18th) being raised on much the same principles as its predecessors.

They will labour under the same disadvantages and most probably in the same way. Not owing to carelessness, or half-heartedness on the part of officers or men, but entirely through inexperience.

And this will always be the case until we have a nucleus of carefully trained men, on which to raise our regiments of Mounted Infantry, when the necessity for them arises.

COMPOSITION.

The working unit, in Mounted Infantry, may be taken as a Company—of not more than 100 men—commanded by a British Subaltern, with two young and active Native Officers under him. The rank and file should be enlisted from the warlike tribes of Northern India and Afghanistan, care being taken not only to get men of the right sort, but men of the right *weight*. The latter is a most important particular which is often lost sight of in enlisting for Bengal Cavalry. A Sikh or Afridi weighing 12 stone is a magnificent foot soldier, but out of place when mounted on the small horses of India. The outside weight for a Mounted Infantry man should be 10st. 4lbs., and there would be no difficulty in getting sturdy fellows of the right sort at that weight. *This limit of weight should perhaps be extended to British and Native Officers.* The strength of Farriers and Buglers would be as in the Bengal Cavalry. The ponies should not be over 14 hands on any account; the higher the animal the less easy it is to mount and dismount quickly—one of the most important functions of Mounted Infantry.

The animals should be cobby and thick-set, not polo or racing ponies; strength and endurance, not speed, is required. Great stress is laid on the necessity of having young and dashing light weights for officers, British and Native. A very great cavalry leader says that "no man is fit to command a Cavalry Regiment after thirty-five," and this applies equally to Mounted Infantry. We want the energy, the devil-may-care dash, the physique, of youth—tempered with early experience in the field. A Company is recommended as the unit; because, from the nature of the services required from Mounted Infantry, it is not so likely to be employed in large masses as in small parties. For purposes of discipline and interior economy, six or more companies might be joined together, and called a regiment, under the command of a senior officer. But the Company officers should have undivided command of their Companies, and should drill and manœuvre them as separate units; otherwise the Corps will be in danger of degenerating into an inferior Cavalry Regiment.

SADDLERY & EQUIPMENT.

The pattern of saddle recommended is the new Regulation Infantry Field Officers' saddle. This combines the comfort of a hunting saddle, with the usefulness of a Cavalry Regulation saddle. It allows too of a hunting seat, instead of the straight-legged balance seat, which the high cantled cavalry saddle enforces. Care must be taken that the saddlery is of suitable size, and that the flanges are not too long for the short-backed ponies of this country. To avoid pressure from the flanges, the 15th Hussars inserted a hinge at the point where the flange leaves the saddle. These hinges open upwards, so that, with every

motion of the horses' loins, the flange rises or falls, thereby avoiding all undue pressure on that part from the weight of the rider. No crupper is required; it adds weight, and is of no practical use. The standard mouthpiece should be a plain thick snaffle only, as used by the Don Cossacks, with a running martingale: a bit being used only for exceptionally hard-mouthed ponies. It has been found by actual experience that a Regiment of Cavalry will march considerably faster on plain snaffles than on bit and snaffle together. The bit may be necessary for a cavalry soldier who has to fight on horseback, but is not necessary for a Mounted Infantry man, who uses his pony only as a means of rapid conveyance, from one point to another, and who does all his fighting on foot. The reins should be sewn, and not buckled, to the snaffle. This method is stronger and safer, and saves the men trouble in cleaning. The head stall should be stout and strong, and should be always used for picketing the ponies in the field. The best and simplest mode of joining the snaffle to the head stall is by the ordinary T fastening. The wallets should be capacious, and the men allowed to carry what they like in them. The saddlery and harness for the new Burmah Mounted Infantry is ordered from England, on the grounds, I imagine, that experience has taught the English authorities the most suitable equipment for Mounted Infantry. The Manager of the Cawnpore Factory, with an Indian pony before him, will be able most probably to improve on this.

One blanket can be carried folded under the saddle, thereby doing away with the necessity of a numdah; or, as in the Russian Cavalry, a blanket can be carried on the seat of the saddle, being kept in its place by the surcingle; the second blanket, in which are the heel ropes and pegs, can be carried on the flanges behind the saddle. The man's great coat can be strapped in front of him over the wallets.

The head rope can be carried as in Bengal Cavalry Regiments. Captain Rowden of the 99th tells me that "in the Zulu war a 'knee halter' was used both for grazing and securing in the lines, and n-heal ropes were used." This method of securing horses is common in South Africa; it consists only of a numdah-lined shackle, which is fastened above the animal's knee, and an ordinary head-stall; from the ring of the shackle to the ring of the head stall runs a leather thong which is tightened till it is about the length of a man's forearm and fist. When thus secured the animal can graze with freedom, and can be easily overtaken and caught again.

This would seem an excellent way of securing horses whilst grazing; but without some other fastening, not suitable in an Indian camp, where stallions and mares are mixed.

The best pattern water-bottle is that carried by the 5th Punjab Cavalry, of canvas, and slung under the pony's belly.

Regarding the equipment of Mounted Infantry men. To start with, everything should be for use, and *nothing* for show: every means should be taken to prevent the men from going in for smartness in its lower forms. They should be taught that the burnishing of bits and spurs is not the great end of a soldier's career; and that immaculately polished boots do not strike terror into the heart of the

foe. Their whole attention should be concentrated on making themselves into thoroughly efficient, rough and ready soldiers; and all idea of competing with Cavalry, in what I have called the *lower* forms of smartness, should be decidedly discouraged.

The dress should consist of: a khaki serge blouse with lots of pockets in it, on the pattern of the drill blouse worn by the Guides Infantry. Bedford cord pantaloons (not breeches), strapped with leather on the seat and between the knees. Leather gaiters, with the new pattern shoe for natives, and ammunition boots for Europeans. Spurs, short-necked, of the "hunting" pattern. Head dress according to nationality.

In the Soudan, 50 rounds of ammunition were carried *en bandolier*, 10 rounds in each of the wallets (on top of every thing), and 20 rounds in an expense pouch, on the right front of the waist belt—making a total of 90 rounds per man. The *bandolier* system has been objected to on account of the exposure to the weather sustained by the ammunition. On this subject I quote from the Assam Police Report, 1882:—

"Before recommending their (bandoliers) use I tested them by making the men on patrol duty wear them, filled with cartridges. They were ordered not to protect the cartridges from rain. At the end of three months, I fired several, and not one even missed fire. * * * If they (bandoliers) are properly made, there is little fear of the cartridges falling out, and if the bottoms of the cartridges are greased, they become quite waterproof. Flaps are not of much use, and they give the bandolier a clumsy appearance. * * Bandoliers allow of more freedom of action and are very handy. If the men are called out in a hurry extra ammunition can be carried by every second man carrying an extra bandolier, full of cartridges. Perhaps the best argument in favour of bandoliers is the fact that the Boers, a practical people, and accustomed to bush fighting, wear them."

As they proved a success in a country where the annual rainfall is 88 inches, they ought to be useful in any climate.

In the Guides Infantry, 20 extra rounds of ammunition are carried in a sort of waistcoat, which rests on the chest, and is supported from behind by a cloth strap, which is attached to the waist belt. This method, invented by Colonel Campbell of that regiment, has been found to answer admirably. The waistcoat could be worn as well as a bandolier in case of necessity, which would make the total number of rounds carried 110, well distributed over horse and man.

The question of how the rifle is to be carried is a most difficult one to answer. It is too long and too heavy to be carried with comfort on the back; and the same objection applies to a bucket. Carried as a lance, with the butt in a socket, attached to the stirrup iron, has been tried; but it is found that the extra weight on that side gives a list to the saddle, and increases the chances of sorebacks. I am told that this is the case with the lance, and the rifle being heavier the danger would of course be greater. In Texas the ranchman carries his rifle in his hand, resting it on the horn of the pommel of his saddle; when using the lasso he buttons a leather flap, about the breadth of a man's hand,

over the barrel of the rifle. This flap supports the rifle sufficiently to free his right hand for a minute, but is not enough to keep it steady permanently. In the Soudan the rifle was carried always in the hand, the man resting it across him on the wallets; and those men I asked about it said, they very soon got accustomed to it, and did not feel the weight at all. This method is simple and effective; the man is always ready for action at a second's notice; and as its weight does not inconvenience him, this seems the soundest way of carrying the rifle. The sword bayonet, which is carried in the usual infantry way, is preferable to the ordinary bayonet. The ordinary bayonet is perhaps the best killing weapon; but the sword bayonet is not far behind it in that respect, and is very much more useful in general camp work—for cutting up meat, cutting wood, etc. The only drawback to it is, that men might be tempted, in the excitement of the moment, to charge with it when mounted.

ESTABLISHMENT.

Take a regiment of Mounted Infantry as composed of six companies, each of 100 men of all ranks—total 600. The peace establishment of British officers required would be: 1 Commandant, 1 Adjutant, 1 Quarter-Master and 6 Company Commanders. For service I would add an extra European Officer to each company, making a peace strength of 9 British officers and war strength of 15 British Officers. Strength of Native Officers: 16 Company Officers, 1 Native Adjutant, and 1 Native Quarter-Master—total 18 Native Officers. Non-Commissioned Officers, as in a Native Infantry Regiment. Strength in ponies 600: Officers and Native Officers having two chargers.

A Native Quarter-Master is recommended. The feeding and equipping of ponies, mules, and men, would entail more labour and require more experience than in either a Cavalry or Infantry Regiment. The European Quarter-Master in a Native Infantry Regiment is usually one of the last joined Subalterns, fresh from a British Infantry Regiment, without any experience of the ways of the country, or without any knowledge of the care and feed of animals on a large scale. A Native Officer of experience would be of the greatest value and assistance to him; in fact it would be difficult to have a really efficient Mounted Infantry Regiment, on the lines laid down, without this Officer. As regards pay, I would recommend the same rates as in the Bengal Cavalry; but as the feed of a pony, and one share towards keeping up the mule establishment (as recommended in the next paragraph) would come to less than a sowar's expenses, the pay might be reduced slightly without making Mounted Infantry a worse paid service than Cavalry.

Permanent mule transport, for ammunition and baggage, should be attached to Mounted Infantry Regiments—as in the Frontier Force—but on full Kabul scale. In time of peace these mules could be used for procuring grass—taking the place of grass-cutters' ponies; and in time of war, Mounted Infantry should learn to live on the invaded country, working through the Quarter-Master and his staff. A Cavalry Regiment lived for three weeks in a barren country, like Afghanistan, entirely

independent of the Commissariat Department—an experiment which, from the Regiment's point of view, was a great success; but the Commissariat Department complained that their myrmidons were driven out of the market, *i.e.*, that the sowars who bought direct from the villagers could afford to outbid the Government contractors. It is recommended that the mules be bought regimentally and paid for by Government, but fed and kept entirely by the men, just as Native Cavalry keep up their grass cutters' ponies. This would be economy for both the men and Government; the former would only have to pay their share, according to rank, towards the feed and keep of the "mule establishment" without any risks, and the latter would have a thoroughly efficient body of transport kept up free of cost. Mules bought regimentally are, as a rule, better than those obtained through the Transport Department, the reason for which is well known to those who have had experience in both lines.

The ponies should always be picketed in the open, and only clothed with the clothing they would have on service; manes hogged and tails docked for cleanliness, and to save trouble in grooming.

MANŒUVRES.

The manœuvres should be in single rank and of the simplest description, such as fours right, and left, and about; wheeling into columns of half companies or quarter companies (to use the word "sections," being a cavalry term of special meaning, would perhaps create confusion); and reforming company from column of half or quarter companies. The most important point is: dismounting and mounting with the greatest smartness and activity, No. 3 slinging his rifle and holding the ponies of Nos. 1 and 2 in his right hand, and of No. 4 in his left, as in the new cavalry drill. No. 3 would seem to have his hands too full with four ponies and a rifle; but this system was tried and succeeded in the Soudan.

The Cossacks and Cape Mounted Rifles teach their horses to lie down—a very useful manœuvre. For though cover for the horses is very often obtainable, yet on occasion serious loss in horses may be avoided in this way. By Captain Hayes' method a regiment of horses could be taught to lie down in a month. I saw a pony taught to lie down in about two hours by this method, but it would require daily practice for some time to thoroughly accustom the horse to be fired over and to lie down on all occasions—such as after the excitement of a rapid advance, or under a heavy fire. A favourite Cossack manœuvre is—to advance in line, at a gallop, to a certain point, pull sharp up, and immediately dismounting two men out of three (they work in threes not fours); two-thirds of the regiment go into action with their rifles as infantry, and meanwhile all their horses are made to lie down.

MUSKETRY.

The shooting of the men should be most carefully looked to, and they should never be allowed to fire in action, except in volleys, by word of command. Their training in shooting should be made as various and pleasant as instructive; and care should be taken not to make musketry a burden to them.

By "pleasant" I mean that musketry be made a source of pleasure to the men and not an irksome duty. The men should be encouraged to friendly rivalry; and company challenge cups (or the equivalent) instituted. It is wonderful what excitement and rivalry there is to win the flag, which flies before the lines of the champion shooting company in some regiments. For a whole year, the other seven companies envy the winners of that flag; and you see them, of their own accord, working up the bad shots of their companies with a view to winning it next year. Another way of making musketry pleasant is by not having too much of it. Except for a few enthusiasts, to whom all honor be due, Regimental Officers in the Native Army heartily dislike musketry. And why? Because they have too much of it. And when the officers are utterly weary from the constant drudgery of the range, the contagion must spread to the men too. The only time one sees any keenness is in the competition for the Commander-in-Chief's prize, or the Cureton prize.

With this end in view, *i.e.*, making musketry popular, it would seem wiser to leave the entire training of the men to the discretion of the Commanding Officer, allowing him as much ammunition as he requires. Every encouragement should be given the men to use their rifles, either for sporting purposes or private shooting at targets.

Another suggestion for making musketry attractive, which I make with some diffidence, and only because, for financial reasons, increased expenditure would have a poor chance of being sanctioned, if decreased expenditure in another direction could not be suggested to balance it; and that is the abolition of "good conduct pay," and the application of the sum now expended on it to rewards for the *general efficiency* of the Mounted Infantry man, in Musketry Riding, and all his other duties.

With British soldiers, the system of G. C. pay succeeds admirably I believe. It was invented as a reward for those who could steer clear of the special weaknesses which the British soldier is heir to; and both as a reward, and as a vehicle for punishment, it has, I am led to believe, succeeded. In a Native Regiment the case is different; looking back through the defaulter sheets of a regiment you will not find a case of drunkenness in five years. In many regiments nine-tenths of the men entitled to them have the good conduct badges due to their service; not because they are any better behaved than British soldiers, but because their temperaments do not tempt them to stray into those particular paths which lead to the loss of G. C. stripes. When it comes to fighting the Russians it will not be the "good-est" regiment from a "good-conduct-stripe" point of view that will stand to us best; but the most *efficient* regiment. And therefore I say let us spend our money on "*efficiency*" rather than on "*goodness*;" or of course if the Financial people will allow it, let us spend it on both.

USES IN THE FIELD

In the field the main function of Mounted Infantry should be to support Cavalry, or guns, when footmen cannot keep up with them. It can also be used for scouting, or in small parties, to follow up and harass a retreating enemy. In fact it can do the whole work of Cavalry, except charging on horseback. Most Cavalrymen hate dismounting; and we very seldom find them really using their carbines

with effect; whereas a Mounted Infantryman, being practically helpless for fighting purposes on horseback, is most eager on all occasions to dismount and use his weapon. The smallness of his pony enables him to dismount and mount with the greatest rapidity; and he is not hampered with a sword or lance. Once on his feet he is as light as the lightest Infantry. As a scout he is equal to a Cavalryman; and in pursuit—even though his fire may not be as destructive to a scattered and flying enemy as lance or sword—yet the moral support of a compact body of Mounted Infantry, following in their wake, would add confidence to the Cavalry, scattered in pursuit, and enable them to press their pursuit, firmer, and further. On the line of march, the “amble” should be the regulation pace for Mounted Infantry. Of course, it does not look well, but as we are going in entirely for “efficiency,” that will not matter. At an amble a pony will cover enormous distances, day after day, and come in fresh at the end of it. The Cossacks, I believe, made all their marvelously long marches in the Russo-Turkish war at this pace. It is comfortable for the rider, comfortable for the pony; the ground is got over at a very rapid pace, and at the end of the march, man and beast are comparatively fresh and fit for work.

CONCLUDING REMARKS.

In conclusion I would again urge the expediency of raising an experimental body, if only of 100 men, in time of peace. I am sure, judging from the performances of the scratch Corps that have been raised in recent wars, that trained Mounted Infantry would speedily show themselves the arm of the future. Having served with all three arms, I have no hesitation in saying that I would rather be opposed to Cavalry, or Infantry, than to Mounted Infantry; and I trust before we meet Russia we shall have many regiments of Mounted Infantry, which will cause the Russians to hold the same opinion. Economy in military expenditure is, I am sure, false economy. A few regiments, more or less, may make the difference between victory and defeat when the great struggle comes. Let us have economy in any other Branch, or Department; but let us remember that India was won with the sword, is now held by the sword, and in the future will have to be defended by the sword. Let us remember that military economy now may mean deadly disaster in the future. The Americans, it seems, are in the same fix, judging from the following passage, in an article on “Mounted Infantry,” by “Ubique” in the American U. S. Magazine: “None know better than the military authorities of the day what is really required to render an army, small though it be, a perfect machine; but when recommendations are made, then comes the question—‘How much will it cost?’ shortly to be followed by the curt and stereotyped reply so familiar in correspondence with the Treasury, ‘We have no funds available to meet this extra expense.’ The scheme or project, no matter how urgent, no matter how necessary, is then neatly folded, docketed, *tied with red tape*, and consigned to that bourne from which such documents *never return*.”

SIMLA,
July 18th, 1886. }

WITH THE GUARDS CAMEL REGIMENT IN THE BAYUDA DESERT.

By LIEUT. C. V. F. TOWNSHEND.

KORTI.

27th, Saturday—*In camp at Korti.*—It was known on Saturday that the Camel Corps and the Mounted Infantry under Sir Herbert Stewart were to advance on Monday, but whether across the Bayuda desert against Khartoum or along the river against Berber no one knew, and many were the rumours flying about. I heard Barleigh, the correspondent of the *Daily Telegraph*, say that he knew for certain that we were going by the river and not by the desert. The troops were quartered along the river bank under the palm trees, and strong outposts were established watching the desert route, which comes in here. Church parade was held the next day, at which all the troops in camp attended, drawn up in square facing inwards. Lord Wolseley, looking very smart in khaki, brown boots, and "Sam Browne" belt, stood in the centre with Sir Herbert Stewart, General Sir Redvers Buller, and General Brackenbury. Lord Wolseley always wore a blue-spotted puggree round his helmet, which distinguished him from all others.

The 19th Hussars looked very smart in blue with white helmets and well blacked boots; the Camel Corps in red, Bedford cords, black putties and brown helmets, the officers wearing long brown leather gauntlets (which we found rather hot when worn); the Mounted Infantry were in grey tunics, cords, and puttees, and the Infantry (only the Sussex and Stafford Regiments were present) were in grey uniforms. The camp presented quite a lively appearance. In the afternoon the Infantry bands played and the officers promenaded up and down the river bank.

I dined on Saturday night at the mess of the Mounted Infantry with Captain Pigott of the Mounted Infantry, my old chief at Suakim; (he got his Brevet Majority after this expedition) and had a long talk over old times with "the fuzzies." The men composing the Mounted Infantry were very smart; they were all picked men, mostly from regiments serving in England; they were very good shots mostly; they were also mounted on better camels than ourselves. I still think, however, that it was a great pity they were not mounted on Egyptian ponies. These hardy little brutes stood the fatigues and hardships of the desert splendidly as was proved by the 19th Hussars; the camels died, as one might say, like flies. The services of the Mounted Infantry as Mounted Infantry proper were quite lost, for they could not fight on camels or perform the drill of Mounted Infantry; they could have done this at drill, but they were not allowed to do so on service when

in Stewarts' column they fought as the Camel Corps, as Infantry pure and simple. Each of their companies carried a distinguishing pennon. An order came out on Monday postponing the march till the following day; Colonel Boscawen drilled us in the afternoon. This drill on camels caused always much merriment amongst the men; the scene that ensued on the command "quarter column on the leading Company" baffles description.

MARCH ACROSS THE BAYUDA DESERT.

The troops, as mentioned in orders, left Korti and formed up on the edge of the desert at 3-30 P.M. in the afternoon of December 30th, under the command of Sir Herbert Stewart; the order was given to march, and we marched past Lord Wolseley* and staff into the desert in column, and a stirring sight it was. I noticed one or two special artists hard at work sketching us as we entered the desert. Our little Maltese cook 'Carlo' also marched past his Lordship disguised as a bugler causing much merriment among the men.

The force consisted of one troop of the 19th Hussars as advanced guard, the Guards, Camel Regiment, 400 Mounted Infantry and an immense convoy of commissariat and transport camels. Sir Herbert Stewart frequently rode up and down from one end of the column to the other on his pony; every one was full of enthusiasm and keen for a brush with the enemy. We were halted at 6 P.M. for tea, the march was continued by moonlight.

Halts frequently occurred during the night owing to the many mishaps to the loads amongst the transport camels. This was very wearying; one halt lasted half an hour, whilst a sick man who had been missed was searched for. He was found some way in rear and strapped on to a cacolet, the camel having strayed. When any pack fell off a camel the cry of "halt in front" was carried along until the bugle sounded the halt, and when ready to go on again "all right in rear" were the words carried along until the "advance" sounded. On Wednesday morning, the column halted at the entrance to a gorge, the men being allowed to take two pints of water from their skins, and parties were sent to cut the long grass for the camels with their sword bayonets, the camels having been previously fed with 4lbs. of dourra grain. The onward march was continued at 3 P.M., the desert for the most part consisting of sand, black boulders, and sometimes we passed through grassy wadys with low black hills running parallel to our route. At 12 o'clock on this night "Auld Lang Syne" was sung from front to rear whilst on the march, and the effect was very fine; the air was quite still, and the long column presented a weird appearance in the moonlight. At 1 P.M. we reached the wells of El Howeyiat; here we halted and slept on the ground in our accoutrements in quarter column, the officers on the reverse flank. There was very little water here, and that was muddy; sentries were placed over the water skins. At 6 A.M. the "Rouse" sounded, and after getting breakfast we marched at

* On this occasion, Lord Wolseley is reported to have said "the first scene of the last act, and may it end well."

8 A.M. We halted in a wooded valley at 12 P.M. for the men's dinners, and a ration of one pint of water to each man was served out. There was a good deal of grumbling among the men. This was most irritating, as the best means possible were taken by their officers, and the men seemed to have no idea of economy as regards their water. This pint of water had to serve for everything till the next day, when we hoped to reach the Gakdul wells. None of us had washed since leaving Korti, and one felt very dirty, however I always managed to save a little tea in my pannikin for shaving purposes. Two Arabs, a man and a girl, were captured by our scouts this morning, and taken before Sir Herbert Stewart. The scouting of the 19th Hussars was admirable; whenever we entered one of the many defiles, the Hussars on their hardy little ponies could be seen topping the ridges of the hills on either side for half a mile. Our men did not seem to bear their fatigue well. I should have thought that the Marines acclimatized at Suakim would have outstayed the guardsmen fresh from England, but it was exactly the other way; nine of our company fell out to see the doctor on halting this day; no guardsmen fell out; our men were "all there," however, when it came to actual fighting; they then upheld their old reputation. Marching all night we reached the wells of Gakdul on Friday morning (January 2), and advancing with due caution we occupied the valley. These wells are situated in one of the torrent gorges of the Gebel Gilif range. The wells consist of three large water-worn cavities at different levels and shut in by precipitous cliffs. The lowest pool of all is the largest and is supposed to contain two years' supply of the existing demand. Many animals drank there; consequently the water was unfit for human use. The second pool 10 feet above was used for cooking and drinking purposes. This pool was almost inaccessible, the sides of the cliffs rising to about 90 feet from the water, a bucket and cord being used to procure it. The third pool about 8 feet above was inaccessible.

The whole of the camels of the force, numbering about 2,000, were watered—a tedious and noisy business—as soon as possible, and Sir Herbert Stewart started back for Korti that night taking the Mounted Infantry and our camels, in order to bring across the Sussex Regiment. The Guards Camel Regiment, in which I was serving, was left to hold Gakdul wells and to construct two forts covering the wells. It was constituted as follows: No. 1 Company (Grenadiers); No. 2 (Scots Guards); No. 3 (Coldstream); No. 4 (Royal Marines). The regiment was commanded by Lieut.-Col. the Hon. E. Boscawen.

We soon made ourselves comfortable at Gakdul. Fatigue parties were told off every morning to work at the stone redoubts, and hard work it was dragging the boulders and piling them up. All around Gakdul for miles were a succession of rocky hills and ravines with innumerable gorges. Our outpost duty was very severe. Going round the sentries was no joke in the pitch dark, stumbling and falling about among the loose rocks and wearying in the extreme. One's boots were soon cut to pieces, and at last we tied pieces of leather around the boot to answer the purpose of sandals. The two forts were named Stewart and Boscawen (after our Colonel), and were intended to be occupied

only on the alarm being given, the officers and men being encamped in the valley.

These redoubts were commanded, however, by neighbouring heights. Sir Evelyn Wood obviated this defect, when we were retiring across the desert from Metemmeh later on, by building many small stone redoubts capable of holding a N.C.O. and five men. These he perched on all the neighbouring tops of hills, and they were called "Wood's pepper boxes." Major Kitchener had been left with us, also Colonel Dorward of the Engineers. The mess was very jolly, and my banjo came in useful at times after dinner. Small scouting parties used to go out frequently under Major Kitchener. One day, whilst accompanied by Colonel Sawle, Captain Vesey Dawson and a few of the marksmen on camels, he came across a native caravan somewhere near Abu Halfa wells, which were about 10 miles distant from Gakdul. Kitchener at once charged, the unarmed natives flying right and left; the convoy consisted of dates, which kept us on date jam in the mess for some time. Nothing unusual occurred at the outposts during the time we occupied Gakdul, except on one day, when we nearly captured two Arabs, who were scouts in all probability, for they had no camels or baggage of any description with them.

We afterwards heard that the Mahdi's army occupied the wells of Abu Klea 50 miles distant all the time whilst we were at Gakdul! That getting tired of inaction they were actually in motion to attack us at Gakdul, when their advanced scouts saw us advancing from Gakdul, and that they then decided to retire again and await us to give battle at the wells of Abu Klea.

One morning I was on outpost duty, and in command of the picquet on the extreme right, No. 1, looking from the hills on to the desert in the direction of Metemmeh; whilst talking to Col. Boscawen, who had visited my picquet, we suddenly observed two Arabs approaching on foot and making towards the hollow road in which the picquet was concealed.

The Colonel at once ordered me to endeavour to make them prisoners, and taking a big Grenadier with me, I stalked the Arabs, taking advantage of the cover afforded by the rocks and boulders.

On getting close to them, we saw that they were armed with swords and spears, and as they seemed to hesitate about their road and branch off to the left, we dashed out on them, as there was no more cover. They did not see us until we were about 40 yards off, and then one ran and the other stood his ground. I was close on him, when he seemed to think that two to one was not fair and turned and ran like a hare. I loosed off the six chambers of my revolver at him, but missed every shot as he bounded from side to side; the guardsman fired round after round from the knee, but failed to hit either.

We chased them fruitlessly for about a mile, and then I thought it best to return, and I had great difficulty in finding my picquet again, the hills and gorges being all so alike.

Sir Herbert Stewart returned with troops and stores on the 13th of January, I think, and we were ordered to advance on Metemmeh

the next day. About 70 dined at our mess that night, Lord Charles Beresford, Sir Herbert Stewart, Colonel Burnaby and most of the officers of the Heavy Division of the Camel Corps, which had arrived that day, being among the guests. It was the last good dinner that many among them eat.

On the 14th the force left Gakdul about 2 p.m. under Sir Herbert Stewart, whose orders were, we heard, to occupy Metemmeh and to establish himself on the Nile. The column consisted of the following troops :—One Squadron of the 19th Hussars under Colonel Barrow, the Guards' Camel Regiment under Colonel Boscawen, the Heavy Division of the Camel Corps under Colonel Talbot, the Mounted Infantry under Major Gough, four Companies of the Royal Sussex under Major Sunderland, half battery of artillery (Mountain Battery) under Captain Norton, half of the Naval Brigade under Lord Charles Beresford, the Bearer Company, hospital stores and a large convoy of provisions.

This time also some correspondents accompanied us ; amongst them Burleigh of the *Daily Telegraph*, Melton Prior of the *Graphic*, Villiers of the *Illustrated* and Pigott of Renter's Agency. Lord Charles Beresford, I remember, rode a very fine white donkey with a saddle and holsters. His men were on camels.

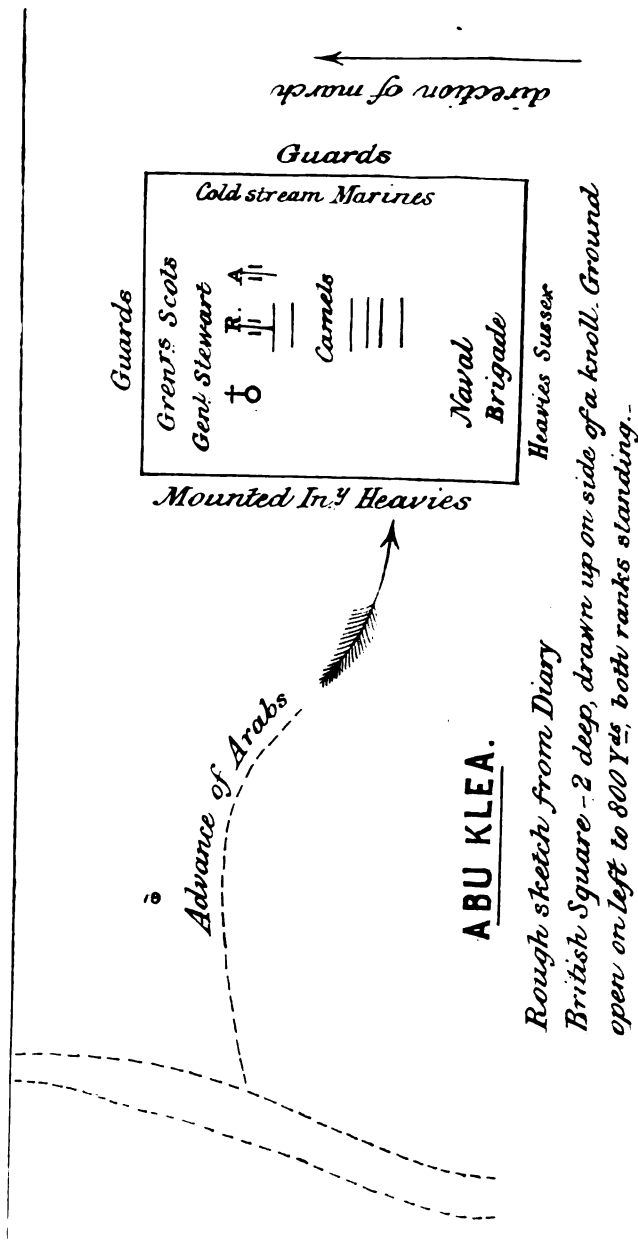
We lost many camels on the march, and the labours of the rear guard were incessant. No enemy were seen and all went well till the afternoon of January 16th, when, on approaching the pass which leads to the well of Abu Klea, the Cavalry reported the enemy in force in position near the wells. Major French of the Hussars had a narrow escape from being captured, as he rode into a group of Soudan horsemen on rounding some rocks. I remember how glad we all felt at the chance of a fight, though I never believed that they would be as formidable as they proved, and this, I think, was the opinion of most of us. The column was massed, and we proceeded through the mouth of the pass and found ourselves in the evening in a large rocky valley or rather wady with long grass, with hills on each side, and we could see many camelmen and horsemen reconnoitring us. Gen. Stewart halted us and we formed a zareba. A prominent height, about 1,000 yards on our left, was then occupied by some Mounted Infantry ; but some hills on our right at about 900 yards distant were soon occupied by a yelling mob of the enemy's riflemen, who began to pop away at us at first with no effect, but after a time they got the range and the fire became galling. We were now hard up for water, and suffering the pangs of thirst. Some of the reserve water was issued to the men—all were impatient to occupy the wells and satisfy the cravings of our thirst. I saw three or four men lying speechless from thirst on the ground, and the surgeon had some difficulty with one of them. As soon as darkness fell, strict orders were given that no lights should be shown. Notwithstanding these orders, every now and then a man would light his pipe ; every one would shout, "put that light out," and a volley from the enemy would be the result. They kept up their harassing fire all night (two or three of our people being wounded and an Aden boy killed) together with an incessant beating of tom-toms, which kept us very much on the alert as can be

imagined. I was told off with one company for the night to support the Hussars where the zareba was very weak. Twice during the night we all sprang to our feet, thinking the enemy were about to rush on us as the "tom-toming" got very close and there was no moon.

BATTLE OF ABU KLEA.

January, 17th, 1885.—At daybreak the enemy's riflemen, who were hunters from Omdurman and armed with Remington rifles, got our range to a yard, and several men began to be hit. A company of the Mounted Infantry were sent out skirmishing on our right to take off the fire, but they seemed to make no visible effect and had one or two wounded. Norton fired a shell or two, one bursting right among a group of them. At about half past eight I saw Lieut. Lyall of the R.A. carried past shot through the back. Lieut. Guthrie, R.A., who had been doing transport work, volunteered and took Lyall's place (he was afterwards mortally wounded when the Arabs broke our square); General Stewart was watching the enemy in front with a field glass, and one of the officers on his staff, Major Dixon, was knocked over with a shot below the knee. I soon saw that these Soudanese were very different marksmen to the Hadendowas near Suakim. By 9 A.M. Sir Herbert had formed his plan and we marched out of the zareba *in square* (all the camels except those required for ammunition, &c. being left behind), towards the wells with bayonets fixed, not marching on the regular track but keeping on the high ground to the right of it. This was a happy movement, for the proper track to the wells was honeycombed with rifle pits. This was subsequently found out when going over the battle-field.

An escort was left in the zareba to guard the wounded and convoy. From the moment we advanced from the zareba, their riflemen hung on our right flank and kept up a ceaseless dropping fire from the numerous gullies and ridges; they very quickly got our range and our men began to drop right and left; a private named Walters in my company was the first of the Marines to be hit; he fell shot through the chest and rolled over tearing the ground with his hands. He died almost instantaneously. The cry of stretcher increased. We became very impatient to have the fight settled. Tommy Atkins does not like being inactive under a hot fire. Nothing is so trying both to the patience and to the nerves of the men. A movement in square is necessarily a slow one in order to preserve formation, and when the camels in the centre of the square and the wounded impeded us, we scarcely went a snail's pace. Every now and then the square would halt, lie down and fire volleys. Our marksmen (two per company) were ordered out on the right flank under Lieut. Romilly of the Scots Guards, and this proved a wise order, for the enemy's fire perceptibly slackened. A man named Mees, who had been in the Mounted Infantry at Suakim with me, made a beautiful shot. A few of the enemy's horsemen were galloping down from the hills in order to get closer to deliver rifle fire from cover nearer to our square. Mees threw himself down, adjusted his sight and loosed off at about 800 yards; and we saw one of the Arabs bowled clean out of his saddle; the horse galloped off and a bundle of white remained on the ground. The 19th Hussars



could be seen skirmishing on their hardy little ponies very like Mounted Infantry, and sweeping along the high ground and on our left dislodging the Omdurman riflemen who were thus prevented from harassing us on the left flank. Lord St. Vincent of the 16th Lancers, Adjutant to the Heavy Camel Corps, was shot close to me; he was hit in the thigh I think, and he jumped up in the air falling over on his side. He was placed in a cacolet. I asked him if he felt pain, and he said no, and seemed cheery. About an hour must have elapsed this way when about 800 or 900 yards away on our left front we saw a host of banners, red, green and white, and we saw the masses of the enemy's sword and spearmen form in *line* and advance slowly towards us. If I remember right they were in two long lines. Our square was halted and fronted on a small knoll. Hardly was this done, in fact we were still trying to dress and close up gaps, when the enemy's line turned into a disorderly mass which came on at a headlong rush. Some of the Mounted Infantry had been out skirmishing on our left, and they ran hard for our square. The fire of the left side of the square was thus masked. Officers were shouting to them to run clear of the fire. Several of them were overtaken and cut down by the Arabs, who came on without any noise, and *bending down* as they ran to escape the tremendous fire of the Martinis which now opened from the square. This fire was badly directed and too high. The sailors ran out with their Gardner gun, but it jammed at once. Then the endeavour was made to get it inside the square. An immense confusion took place. Our square became a mob huddled back to back recoiling from the Arab masses who, before one seemed to know where one was, were among us cutting and slashing with their long straight swords and stabbing our men with their long spears like so many sheep. The crush was so great that at one time I could not get my arms down to my side, and remained with sword and pistol up in the air, and using all my endeavours to keep my feet. I have since heard the opinion expressed that no camels ought to have been in our square, that they impeded us, etc. etc.; but I really believed the camels were our salvation on that hard-fought day, and that the camels being in the centre held the square as it were together. I cannot describe the confusion at this period of the battle. The Arabs were stabbing even our wounded, who, poor fellows, lay helpless in the cacolets fastened on to the sides of the camels. Lord St. Vincent, who afterwards died of his bullet wound, had a marvellous escape from death when the Arabs were in the square. One of them stabbed at him with a spear, whilst he lay helpless in a cacolet. The Arab missed his aim, and stabbed the camel instead, which rolled over on its side, nearly crushing Lord St. Vincent, but protecting him at the same time. All seemed lost when the Arabs unaccountably began to retire amidst the deafening cheers of our men, not running, but sullenly walking as if they meant to come on again. One could not but feel admiration for them. This was due, I believe, to the Mounted Infantry, whose right flank was thrown forward (by Captains Pigott and Walsh I believe), thereby enfilading the Arabs. A terrific fire was now poured into the retiring Arabs, and they were shot down like rabbits. Just then about five of their sheiks

came charging our square on horseback. It was marvellous to see them coming on at a mad gallop, waving their swords over their heads and seeming to be bullet-proof, the whole of one side of the square firing at them. They were shot down one by one, and the survivor galloped round the flank about 40 yards from the bayonets and came straight for our company.

I could hardly believe my eyes, for all the men were blazing at him. When a few yards from us, horse and man came over a tremendous crash and neither stirred again.

The battle was won, the square was re-formed by Sir Herbert, who was on foot, his pony having been stabbed and killed under him. Both his orderlies had also been cut down. It took a long time to make the men cease firing; I was sent out to burn ammunition with some men, and I then saw how great were our losses. The gallant Burnaby was killed and lay conspicuous by his great stature and blue staff patrol jacket with a hideous spear wound in the throat. Some Heavies cut the frogs off his patrol to keep as souvenirs.

Seven officers of the Heavy Division of the Camel Corps lay in a heap together. Lieutenants Pigott and De Lisle of the Navy and several blue jackets lay close to the Gardner hacked to pieces. Lord Charles Beresford had had a narrow escape. He seized the spear of the Arab who thrust at him, but at the same time fell on the ground, and in this position shot the Arab with his revolver.

I should say about 80 or 90 of our men, mostly Heavies, lay about in heaps and roughly about 1,500 of the enemy. We burnt several boxes of Martini ammunition, being unable to take them with us; for many of our camels had been stabbed. The rifles of the enemy were broken to pieces against rocks, and their swords and spears collected in heaps and burnt. We marched on for the wells, with many halts, and the men fainting for want of water, which we reached about 5 p.m. There was an abundance of very brackish water which we thankfully drank. Previous to our arriving at the wells, Count Gleichen of the Grenadiers shared with me a pannikin of literally yellow liquid mud (it was *not* water,) which he had procured somewhere or other; where I did not stay to ask him. We slept that night in square. We felt the cold very much, as we had left behind our great coats and blankets with our camels at the zareba (about five miles distant). A hundred volunteers went back to the zareba that night to bring in the convoy, wounded, stores, etc., under Captain Crabbe of the Grenadiers, and Lieutenant Crutchley, Scots Guards, our Adjutant. They came back early next morning with the occupants of the zareba, who had passed an anxious time while the battle was being fought.

I have endeavoured to give an account of the battle as I saw it; many incidents, too numerous to mention, occurred, to put which down on paper would be endless work. We found the sword bayonets were next to useless for fighting purposes, as they are so blunt-headed. The old triangular bayonet goes into a man easily enough, but a sword bayonet requires a certain amount of strength before it will do its work. I saw a big Grenadier guardsman rush suddenly among the

long grass and make for one of the enemy's riflemen. The latter sprang up, but the guardsman shortened arms and pointed, knocking the Arab over, but not killing him. I then saw him working away at the Arab with the butt of his rifle, going up and down like a pump handle, before he succeeded in despatching him. These sword bayonets were useful for cutting grass, and that was all.

*One reads a lot about rifles jamming, and the blame is ascribed to the cartridges. This very likely was the case to a certain extent; but I am certain that many rifles jammed through dust having got into the breech blocks. In our company, we always kept pieces of linen, leather, &c, bound round the breech blocks as guards when the rifle was not required to be used in action; but we (the Marines) were the only ones who used this precaution. Even inside a holster, a revolver would become useless through the fine sand, unless protected by something. I always kept a silk handkerchief bound round the hammer of my own.

ADVANCE ON METEMMEH FROM ABU KLEA—BATTLE OF GUBAT, OR ABU KROO.

January 18th.—After breakfast, the day after the battle, Sir Herbert Stewart came to our mess and chatted pleasantly with Colonel Boscawen. He seemed in capital spirits, and said that, if he "had only had a regiment of cavalry with him, Metemmeh (25 miles distant) would now be in his hands." When one saw what kind of town Metemmeh was, nearly as large as Dongola and every mud-house a fortress in itself, one thought differently, and that the cavalry would have had some trouble to take it. Cavalry are not of much use, except for reconnoitring purposes, against these Arabs of the Soudan. They, oddly enough, seem quite to like horsemen to charge them, and our cavalry had not fought at "El Teb" for nothing. I heard people say, not once, but many times, that the Hussars showed inaction at Abu Klea, that when the *mêlée* took place, then was the time for Colonel Barrow to charge and cut them up, etc., etc. Colonel Barrow though was at "Teb" and knew the worth of a charge among the Arabs when he would gain nothing and be very roughly handled in the bargain. It was as much as his men could do to kick their little ponies into a canter, and the 19th were not light men. It seems a pity that some of the Mounted Infantry were not on ponies, and so able to pursue the routed levies of the Mahdi.

A black (Nubian?) deserted this morning from the enemy and came in to us. He spoke Italian fluently; he had fought against the English at Tel-el-Kebir in one of the Soudan regiments. He was afterwards in the expedition of Hicks Pasha, and escaping the massacre near El Obeid joined the Mahdi's service. He was then a Sergeant in

* Since writing this I have seen Major Crabbe, Gr. Guards, in London. He has had to draw up a report on the rifles "jamming." Another cause in my opinion was this: the men carried Bandoliers with ammunition in them, and this ammunition had been knocked about for a long while, and the metal cases were, in many cases, split and bent.

the riflemen of the Mahdi, and about 60 of these riflemen he stated (it was they who did us so much damage at Abu Klea and afterwards) were all regulars from the Soudanese regiments in the Khedive's service. He also affirmed that the enemy had numbered about 10,000 men at the battle, part from Berber and part from the Mahdi's army at Omdurman.

We marched from Abu Klea for the Nile at 2 P.M. on January 18th. It was Gen. Stewart's intention, I believe, to strike the Nile eight miles above Metemmeh. If that was so, we must have lost our way; for we emerged from the desert opposite the town.

We marched all night. Many were the halts and mishaps among the baggage camels. What with the shouting of the men and the noise of the camels, all chance of secrecy, if such was intended, was lost.

Nos. 2 (Scots Guards) and 4 (Marines) Companies of the Guards Camel Regiment were ordered to dismount and march in front of the column. We frequently nearly lost the column altogether; the long grass was in some places up to our waists, and we were soon utterly exhausted from fatigue and want of sleep. At about 2 P.M. we were passing through woods, and now all formation in the column was lost* and the different corps mixed up. I thought of Napier's peninsular war, where, when speaking of Sir John Moore's campaign, he says: "Night marches are seldom happy." I should think that 50 resolute men might have turned the tables on us; we became so tired in the end that, whenever the column was halted, the men would fall down like logs and go fast asleep, and it took a deal of kicking and expostulation to get them on their legs again.

When daylight broke we found ourselves in an immense tract of bush, with a glorious view overlooking the Nile valley, which was plainly discernible by its blue line. We also made out amid great excitement the smoke of two steamers, opined to be Gordon's, and this afterwards proved correct. The bush became much thinner, and coming in sight of some sandhills, we made out the town of Metemmeh and many villages. Our scouts reported the enemy on our left flank. Swarms were seen coming out of Metemmeh to intercept our passage to the Nile. We were ordered to halt and form a zareba as fast as we could, and we saw with rage that we should have to repeat our tactics of the 17th, that we should have to fight, not only to win, but for water and life. A breastwork of biscuit boxes and camel saddles was formed, and before this was completed and our camels' double knees lashed inside the square, the bullets of their riflemen began to sing about us, as they crept up closer through the bush. There was a small rise of ground about 200 yards in front of our square, and hearing Burleigh, the correspondent, point this out and suggest that it should be occupied, I at once asked permission to go and make a breastwork. About half a dozen of us, officers, and Burleigh ran as hard as we could with camel saddles and boxes to this knoll, piling

* Some wag among the men called out in the dark in an unmistakable cockney accent: "Saturday night, I suppose; crowd of people about," and this accurately describes the confusion of the night march to the Nile.

them one on the other. It was warm work, as their riflemen only about 400 yards off devoted all their energies to us. The bullets cut up the ground all about us, as we cut to and fro, between the zareba and the knoll, running like red-shanks; but, strange to say, no one was knocked over. Pigott of the Mounted Infantry also came out to this place with a rifle and potted whenever a black head showed itself in the bush. Count Gleichen had a narrow shave, a bullet striking the buckle of his Sam Browne belt; and a bullet struck a biscuit box that I was placing upon another, by way of a reminder to hurry up.

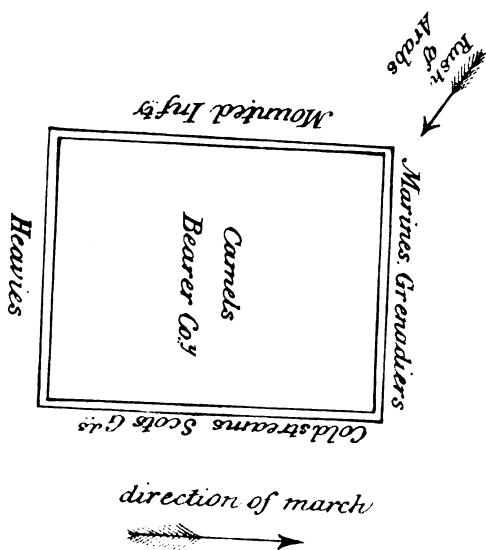
Our occasional volleys in return did not seem to have much effect, and our losses were very severe, about 140 killed and wounded. Sir Herbert Stewart was mortally wounded in the stomach, St. Leger Herbert was killed, also Cameron, the correspondent of the *Standard*, who was engaged in eating some sardines behind a camel when hit. The fire was very hot, the bullets keeping up a continual singing, varied by many thuds, amongst the unfortunate camels who packed together like sheep in a pen kept up a perpetual bellowing. About 100, I believe, were killed. The stretcher parties had more work to do as the day went on. Our rage and impatience to sally out and settle the fight became every moment keener, and at last we became in a mood that would have carried us through any thing. The bullets found their way often between the chinks of the boxes and saddles. I saw one of our Corporals, Holland by name, sitting with his back to the breastwork and smoking a pipe, when he suddenly fell forward dead on his face, a bullet having entered the back of his head. Lieut. White, the other Subaltern of Marines, had the cloth of his puttee cut by a bullet, and Colonel Mildmay Wilson, of the Scots Guards, got a bullet through the top of his helmet. Sir Charles Wilson took command after Sir Herbert was wounded, and at 2 P.M. we joyfully passed the order round to fall in outside the zareba. The bullets of course now fell thicker among us, and many were hit; among others Crutchley, our Adjutant, who received a severe wound, necessitating afterwards the amputation of his leg.

Sir Charles Wilson was in the square, but Colonel Boscawen virtually commanded us and gave all the executive words of command. We commenced our march then for the Nile in square with bayonets fixed and two deep. The amount of ammunition carried by each man was, I believe, unprecedented. Each man carried 150 rounds (50 in the bandolier, 40 in the two pouches, and the remainder stuffed in the havresack and trouser pockets). We left all impedimenta behind, not even taking our great coats. The Sussex, 19th Hussars, the Artillery, and some of the Heavies and Naval Brigade were left in the zareba under Lord Charles Beresford and Colonel Barrow with the wounded. The front of the square was composed of two companies, the Grenadiers on the right and the Marines on the left. We suffered severely from a cross fire as we slowly advanced, Colonel Boscawen moving us into the open ground whenever it was possible to do so. Out of a total of about 68 men in the Company of Marines we lost 22 killed and wounded. I noticed a civilian who had constituted himself No. 3 in the front rank in my right half company. He had a dead man's rifle, belt and cartridge box, and

seemed to make good use of them. I found out afterwards that it was young Ingram, son of the proprietor of the *Illustrated London News*.

We repeated our tactics of the 17th, lying down and firing volleys, gradually fighting our way to the river. Not a man of us would have reached the Nile had they not foolishly charged us ; their riflemen were all round us in the bush, and the sandhills were blackened with crowds of sight-seers from Metemmeh and the various surrounding villages (who would have become very active if we had been defeated), in addition to their army which must have been nearly as large as the one which fought us at Abu Klea. These crowds of people who had come to look on, reminded me of field days at Portsmouth. Soon we saw a mass of banners and spears advancing through the bush, and then we knew that the decisive moment had come. Fate willed this time that the Grenadiers, Marines, and the right company of the Mounted Infantry should bear the brunt, and no troops could have withstood it better nor have fired with better effect. It was about sunset, or near it, when the rush took place, and on they came as at Abu Klea. We opened a sputtering fire at first, the men beginning without orders, and it then developed into a ceaseless "clatter" of independent firing. The charge of the Arabs seemed to melt away under it, not a man got nearer than 30 yards to the square. The cheering was tremendous, and the whole side of the square seemed lit up by the fire from the rifles which threw a red glow upon everything. The enemy, including the spectators from the villages, were now flying in all directions. It was very difficult to get the men to cease fire, though one might sound the "cease fire" on the bugles until one was black in the face. It was about sunset when the square moved on again towards the river. The wounded impeded us, and halts were frequent ; I now discovered that my servant North had been shot through the thigh. The wounded Arabs lying about were all bayoneted ; for whilst lying on the ground they would in some cases slash at our men. One of the Marines, named Meade, a marksman, had his brains blown out by a wounded Arab, apparently dead. A swordsman also showed the intention of going for me, but I cut him short with a revolver bullet. It was dark when we reached the river. We were allowed to go down to the water by companies to drink. I shall never forget that drink if I live 100 years. We were utterly exhausted after our three days' marching and fighting and ready for sleep. I had the bad luck however to be the first on the roster for outpost work, and so had to spend the night with a picquet and visit sentries when I could scarcely keep my eyes open or drag one foot after the other. On the next morning, we marched along the bank towards Metemmeh, and occupied the village of Gubat about two miles from that town. Crowds were surveying us from Metemmeh and many boats were passing to and fro between Metemmeh and Shendy, the families and household goods were being secured. Leaving a guard with the wounded, who had suffered terribly in the night from the cold, at Gubat, we marched back again (about five or six miles) to the zareba. How they cheered us as we approached, and we did full justice to the breakfast of bacon which

ABU KROU
Square - two deep.



the delighted little cook Carlo had prepared for us. The column returned to Gubat again after burying the dead, taking every one with us, camels and all. Sir Herbert Stewart, who was suffering great pain, was carried in a stretcher by four guardsmen.

Reconnaissance in Force against Metemmeh, January 21st.—On the night of the 20th we had orders to parade next morning before day-break, and every one thought that we were to storm Metemmeh. We mustered only about 1,200 men, and the place to be carried was most dangerous when one got into the streets. We all made a very good dinner this night, as we did not know when we should get another. Late at night I saw flashing of lights up the Nile, and reported it to Colonel Bonham, thinking it was Gordon's steamers.

We marched before daylight from Gubat, two companies of the Sussex were left to hold the village and they proceeded to loophole the houses. As soon as it was light, we carried a village (Abu Kroo) close to Metemmeh without firing a shot. On emerging from the village we were close to the town which we could now see was full of the enemy, and we slowly advanced in square. Some banners and flags showing now and then above a rise of ground between us and the town led us to suppose that a charge was meditated by the enemy, so the square was carefully closed up. Norton fired two or three shells which burst well only against mud houses, one might just as well save one's ammunition, and we advanced again.

The enemy opened fire from the houses, but their bullets fell short. Captain Crabbe of the Grenadiers fired two or three volleys with effect at 2,000 yards. After about half of an hour the square had worked round to some cotton fields between the river and the town, about 800 yards; our way being felt by skirmishers under Lieut. Amherst of the Coldstreams. About this time, four large red flags, with the crescent and star on them, were seen above the palm trees, coming down the river, and the rumour ran with intense excitement through the ranks, that these were Gordon's steamers. Burleigh, the correspondent, rode off to see if they were and came back with the pleasing intelligence that the report was correct. Suddenly the dull boom of a gun was heard, and a round shot hummed over the square burying itself on the ground about 20 yards off. We hadn't bargained for this; their next shot was well directed as it fell into the centre of our square and killing a camel. We now deployed into line, if not correctly, we performed the manœuvre very quickly; the order was given to retire just as Gordon's black soldiers were being landed. About 150 of these plucky fellows doubled across our front, dragging two small brass guns with them and cheering us. They opened fire upon the rebels at about 600 yards range near some houses with capital effect. At this juncture I went with Captain Pearson and our right half company to cover the retreat of the Artillery, and Norton took up his position in the village of Abu Kroo. I searched the houses with a party of men, and inside one house a corporal and myself found one of the Arabs hiding. The troops now entered this village in retreat and re-formed behind the houses; the guns were again ordered forward, our half company

still with them, and we took up our position just on the left of Gordon's men, who were still hard at work with their brass guns. Norton again opened fire, and our troops began to leave the village again and advance. We were now ordered to rejoin the other half company in the battalion, being relieved in our work of escort to the guns, by Captain Lord Cochrane and some of the Heavies.

Just as we joined again, Major Poe was carried past hit in the thigh. He looked cheerful and called out to the Marines to keep steady; the command of our company now devolved upon Captain Pearson. Every one was very sorry to see Major Poe hit; he was always conspicuous in action wherever the fire seemed hottest, and certainly about the coolest under fire that I have ever seen; he was the only one who wore a red coat in the whole force, both at Abu Klea and the following actions, so the Arabs must have been under the idea that he was the General. Very soon after this about 12-30 A.M. the order was given to retire again, and we retired by alternate battalions, the Guards and Mounted Infantry. The village of Abu Kroo had been set on fire, and the heat of the flames was very great as we marched through it.

On arriving at Gubat, we were very tired and felt rather dispirited, besides which it was in the middle of the day, and the heat was trying.

I think the men would have liked to have rushed the town, but although there is not much doubt that we should have carried it, yet the movement would have been risky. We had no support—two companies of the Sussex alone remained in rear at Gubat and theirs was the task of guarding the wounded, hospital stores, baggage, etc., so in case of suffering a repulse in storming the town, one would not like to think of the consequences. I don't think in the whole force we could muster more than 1,200 rifles at the most; a repulse would have simply meant annihilation.

All the next day we were digging hard and entrenching ourselves at Gubat. The Guards occupied Gubat itself, which consisted of a small group of native houses; these houses were connected by a stone wall, banked with earth and a zareba'd ditch outside. The houses were then knocked down, with the exception of three, *viz.*, one for the mess hut, one for the Quarter-Master, and one for the orderly-room. The place was then called the Guard's Fort; it was on high ground; we had our own well close to the fort, and we were about quarter of a mile from the river, where the remainder of the force made a large redoubt under the superintendence of Colonel Dorward, R.E. This redoubt was on the river bank, the force living outside in the day and moving inside at night. The ground was defended by wire entanglements on the land side, but it was perfectly open on the river side, and a large island was exactly opposite at about 400 yards distant. This was afterwards occupied always by a picquet of Gordon's blacks, one of the steamers was used as a ferry boat, and commanded by Lieutenant Marling, V.C., of the Mounted Infantry. These steamers of Gordon's were very interesting. They were the ordinary Nile paddle steamboats, but converted into very formidable gun boats by Gordon, perfectly shot proof as regards musketry fire, but of course they were not shell proof. They were covered with enormous beams and rough iron plates here and

there ; there was a large fore-castle built up, one also on the bridge, and one on the quarter-deck. As a proof of what hot work they had seen, the funnels were riddled with bullets, and the protecting beams plentifully splashed. The crews on board were allowed to have their families on board, who lived below. When I went on board one morning a crowd of women were kneading and baking huge pancakes of dourrha at the galley ; most of the men also wore Gordon's medal. These were made of pewter and shaped like the Mejidie ; they were armed with Remingtons and sword bayonets and carried their cartridges in a bandolier worn round the waist like a belt. Lord Charles Beresford took possession of two of these steamers and manned them with blue jackets.

A convoy started on the night of January 23rd for Gakdul under the command of Colonel Talbot of the Heavies ; the Guard's Regiment furnished four officers and 100 men (Coldstream Guards and Marines), as their share of the escort under the command of Captain Pearson. I found my name also among the officers detailed. We started at 8 p.m., a bright moonlight night ; the camels made such a noise and halts owing to the packs coming off were so incessant (we cursed the people who had put those packs on) that I felt certain that the enemy would come out of the town and attack us, but we saw no one. I was in charge of the rear guard and had to use all my efforts to keep the main body in sight. We could hear the "tom-toms" in Metemmeh very distinctly. At midnight we halted and slept in the belt of bush between Metemmeh and Abu Klea. No enemy were seen and we reached Abu Klea at midday next day. The garrison had made a fort with a zareba in which was the hospital. Surgeon Magill of the Guards was doing well, and so was Lieut. Lyall of the R.A. whom we expected to find dead. Lord St. Vincent and Lieut. Guthrie had died of their wounds. Captain Pigott of the Mounted Infantry had accompanied us as far as Abu Klea with despatches for Lord Wolseley, and now he went on by himself accompanied by his servant and a guide with good camels. He had volunteered at Gubat to go at once by himself, but no guides could be found to accompany him. We remained only two hours at Abu Klea and then resumed our march for Gakdul, crossing the battlefield of January 17th. The bodies were decomposing and the stench was very bad ; we found that many had been killed up the wadys by artillery fire. I got leave to fall out and made a rough sketch of the battlefield which I sent to the *Graphic*, who inserted it. We lived on half rations during this march, reaching Gakdul on January 26th. On entering the valley we found one or two good roads had been made, and a large signboard with "Gakdul Junction" written on it caused some merriment among the men. The remainder of the Royal Sussex under Colonel Vandeleur garrisoned Gakdul, and the remaining half battery of Artillery under Major Hunter, and the other half of the Naval Brigade under Lieut. Vanconnet. Every one was hoping that Sir Redvers Buller would be sent across from Korti to take command ; after resting one day Colonel Talbot's convoy set out again for Gubat, taking the Naval Brigade and Artillery in addition. We lost many camels, and arrived at Abu Klea January 30th, at about 9-30 A.M. In

passing over the battlefield I rode up one of the wadys and found a wounded Arab still alive ; his foot and ankle had been smashed by shrapnel I should think ; there he had been lying, in this narrow gully, ever since the battle which was fought on the 17th, and this was the 30th, 13 days ;* he was a perfect skeleton, I thought he was dead, but he groaned as I was passing by ; dismounting I gave him a drink of water from my water bottle. I expect some of his people must have given him some water, for it seems absurd that a man could live 13 days suffering such agony as he must have done. I reported the case and pointed out his whereabouts to one of the surgeons, but I heard afterwards that one of our scouts had mercifully put him out of his misery. A person named Abdul Kader, an Englishman dressed in the garb of a North African Arab, accompanied us. He had started long ago I believe to find his way to Gordon, commissioned by Gordon's friends in England. He kept very close to the column we noticed, (I don't think he succeeded in getting farther than Gubat), and I was very much struck by the enormous dimensions of his "bags" and a pair of badly made Wellington boots of a bright yellow colour.

We left Abu Klea about midday for Gubat ; the column was under the guidance of Lord Cochrane. I was sent out about three-quarters of a mile on the left of the advanced guard with a section of men, scouting on our flank. Just before sunset we came upon traces of natives ; several camels were grazing about. We came upon several large stacks of dourrha stalks surrounded by thick hedges of *Mimosa* bush ; I ordered two or three men to dismount and search about, and under the dourrah we found two boxes of Martini ammunition. Perceiving some cattle not far off we surrounded them and drove eight bullocks off to the column which was just on the point of halting for the night. Colonel Talbot was very pleased with the discovery and capture ; parties were sent off to gather in the dourrha stalk, and the unfortunate camels had a good feed for once in a way that night. We saw a rocket sent up by the garrison at Gubat about 11 P.M. that night. When the column marched next morning at daybreak, I was sent with a company to set fire to these stacks of dourrha, and I heard that the conflagration was seen at Gubat by the garrison, who could not make out the cause. We entered the bush with great caution, Lord Cochrane did his work as guide extremely well, bringing us close to the old zareba where we had fought on the 19th.

Great excitement was caused by about 60 to 100 of the enemy's horsemen who appeared suddenly and kept at a distance reconnoitring us. Two shells were fired at them by Major Hunter, one bursting just over a group of them, and away they went towards Metemmeh at a gallop. Soon we saw the sandhills which hid Gubat and the vedettes of the 19th Hussars. We entered Gubat in triumph, Lord Airlie and Major Wardrope riding out to meet us. There had been no fighting since we had left. Sir Charles Wilson and Stuart Wortley had gone in two steamers to Khartoum taking one officer and 20 men of the Royal Sussex with them, who had borrowed their red coats from us as they only

* We afterwards heard that the Arabs visited their wounded on the field.

had each a grey tunic, whereas we carried two, one red and one grey; the Guard's Fort had become very strong, as we anticipated a hot time if the enemy attacked us with Artillery.

The next morning was Sunday, February 1, and the awful news that Gordon was dead, and that Khartoum had fallen, was whispered around. We endeavoured to keep it a secret from the men, but they soon heard of it; it was very dispiriting, and we now thought that the overwhelming forces of the Mahdi might be expected every day as we were only three marches at the most from Khartoum. The longer we stayed at Gubat the more critical became our position; it seemed as if a second Hick's expedition was to be enacted.

Note.—Gordon, it appears, betrayed by Farrag Pasha, was assassinated on January 26th as he left his house. If this is true, and we had reached the Nile on January 21st and in possession of four steamers, it seems very hard that Lord Wolseley's great plans should have been overthrown just as everything had gone as he anticipated.

Stuart Wortley brought the news; he had come down the river at night in an open boat. He reported, Khartoum in the hands of the rebels, that both steamers had been wrecked, and that Sir Charles Wilson and the remainder of the party were on an island. Lord Charles Beresford started in the "Sofia" with his seamen and two Gardner guns to rescue them. Lord Cochrane also started with the news to Lord Wolseley; a convoy for Gakdul left this night again under the command of Colonel Talbot, taking several of our wounded with it. We now anxiously awaited Beresford's return and orders from Lord Wolseley; the fate of Gordon occupied every one's mind, there was no doubt that our little force was in a most critical position. All kinds of rumours were flying about in camp, and every one seemed to think that we should retire, not by the Nile, but by the Suakim-Berber route; we had heard also that troops had gone to Suakim.

The outpost duty was undertaken by the 19th Hussars in the day time and by Infantry at night. As we were so weak in point of numbers, a system of small *detached* posts* was used. The enemy always kept a big tom-tom going at night, and in the daytime their horsemen watched our cavalry vedettes. It seems strange, but their horsemen would never come within 1,000 yards of our Hussars, whereas their Infantry always endeavoured to come to close quarters.

Foraging parties were sent out every day to cut dourrha, and a small skirmish would take place now and then. In one I remember we, *i.e.* the covering party, were ordered to retire as the party in rear had finished cutting the dourrha and we were moving off; when directly we began to march, several of their riflemen showed their heads above the dourrha about 80 or 90 yards distant and fired into us; we returned the fire, whilst retiring losing one man of the Sussex wounded; we were very fortunate in not losing more. Colonel Boscawen was now

* Chain of detached posts of four men each, one being an N. C. O. or old soldier. Visited every hour by subaltern.

down with fever, and Colonel Mildmay Wilson of the Scots Guards took command ; all the correspondents left by the last convoy except Burleigh, who resolved to stick to us. Melton Prior photo'd the officers of the Guards Camel Regiment before he went. Lord Charles Beresford's steamer returned this evening (February 4) amidst considerable excitement, bringing in Sir C. Wilson and party, and Major Wardrope dining that night at our mess told us the story of about as gallant an exploit as has been done this last 50 years. Whilst going up river it appears they discovered a redoubt on the bank of the river about 40 miles from Gubat. The channel ran about 100 yards from the earthwork, and the rebels had their guns all ready and laid on. Lord Charles determined to run the gauntlet, but the crazy old "Sofia" I believe could not steam more than four knots going full speed ahead against the current, and the enemy plumped a shell clean into her boiler, just as the steamer had got abreast of the work. There was nothing to do for it but anchor abreast of the earthwork and keep up a hot fire upon the embrasures of the work with their Gardners. This was so effectually done, 6,000 rounds being fired from the Gardner, that not a rebel dare show his head ; they could not train their guns consequently, but simply had them run out and fired without sighting at all.

In the meantime Benbow * set to work and mended the boiler ; darkness came out they got up steam again. For some time they were undiscovered, but a few sparks from the funnel betrayed them, and the din and yells that arose in the fort was described as appalling ; they managed to get under weigh and move off without damage, though a hot fire was kept up by the Arabs. Lord Charles rescued the party of Sir Charles Wilson on the island, got up four guns from the wrecked steamers, and ran the gauntlet in fine style coming back. Lord Charles had no doubt that the wrecking of the steamers was due to treachery, so on approaching the dangerous channel, he told the pilot that if the steamer got through all right he would give him 200 dollars ; if they touched he would blow the pilot's brains out. They passed through in safety, a pistol at the pilot's head being good argument. Lieutenant Vanconet was wounded, and a blue jacket or two were killed. The captains and pilots of the two steamers were made prisoners and ordered to be tried by Court Martial. Gordon's black soldiers were not to be trusted now ; 17 of them deserted to the enemy when Sir Charles Wilson was on the island, amongst them, the second in command, a man of whom Gordon wrote, "he is the best Eastern I have ever met, treat him well." Our spirits were now very low, but as the banjo had survived we sometimes had songs at mess notwithstanding.

The next night (February 5) Sir Charles Wilson started for Korti to see Lord Wolseley, taking an escort of 12 men under the command of Captain Vesey Dawson, of the Coldstream Guards ; he dined at our mess before he started, and I remember we had some camel steak for dinner, and most of us did not know it, till the next morning when we were told. A summary Court Martial sat on the following day on the native

* Now known in the Navy as the "man who mended the boiler."

captains and pilots of the steamers. I don't suppose a more "mixed" Court Martial ever sat; the Court was composed as follows:—

LORD CHARLES BERESFORD, *President.*

LIEUTENANT POER, *R. K.*

CAPTAIN PEARSON, *Royal Marines.*

CAPTAIN PAIN, *Mounted Infantry.*

SUB-LIEUTENANT KEPPEL, *R. N.*

One of them was found "guilty" and sentenced to death, but he was let off, because he had brought Stuart Wortley down the river in a boat. We had now 13 prisoners in our Guard-room, all deserters, who ought to have been instantly shot; you cannot extract any truth out of these people; they are naturally liars, and besides they "ate up our rations," as the Tommies truthfully remarked. One or two of these men declared that they had been in Hicks Pasha's army and that there was no ammunition left in Metemmeh; this was most likely a dodge of the enemy's to get us to attack. A native also came in and stated that an army of "Inglese" had reached some place half way from Suakim to Berber, also that an English force (Genl. Earles') was on the point of attacking Berber. This man, I believe, was suffered to depart in peace, and he must have been a spy as there was no truth of course in these statements. We now became very anxious about news; no convoy came yet. On February 10th, a messenger came in from Khartoum with the news that a large force was advancing upon us along the left bank, with Krupp guns, and another force, smaller, was advancing along the right bank. We then used the spade a good deal, officers working as well as the men. On the morning of February 11th we observed considerable commotion going on in Metemmeh and horsemen leaving the town and riding into the desert. This meant that our convoy was in sight, they came in about 1 P.M., every body delighted to see General Buller and the 18th Royal Irish (we wanted one or two strong infantry battalions badly) who looked bronzed and serviceable in their Khakie uniforms and putties; they had marched across the desert on foot; they had always marched 19 miles a day and one day did 24. There was great betting now as to what we were going to do. General Buller dined that night at our mess, and the guns of the enemy fired a salute from Metemmeh, either to celebrate the fall of Khartoum, or in joy of men and ammunition having reinforced them from Berber.

We were not left long in doubt; a convoy, with all the remaining wounded, was at once ordered back, amongst them Major Poë and Lieutenant Crutchley, who had both suffered amputation of the leg and held up in a marvellous manner. Sir Herbert Stewart also still lived, though suffering great agony, and left Gubat on the night of the 12th; our battalion furnished 100 Coldstream Guards and Marines as our share of the troops detailed for escort. On the 13th we received orders to parade at 4 P.M. with camels to carry baggage only, so many of these poor brutes had died, that we now were no longer 'cameliers,' we became infantry pure and simple "le camel corps n'existe plus." News arrived in the afternoon that the convoy of wounded had been attacked in the bush, and the 18th

Royal Irish were sent out in haste to support ; they were quickly recalled, however, for another message came in to say that the Light Camel Corps, on its way from Abu Klea to Gubat, had opportunely appeared in the enemy's rear when they had surrounded the convoy, and affairs had begun to look serious. The rebels then fled, our losses being 1 killed and 8 wounded, of which the Guards Regiment lost 1 Marine killed and 3 Coldstreams wounded.

Orders were now issued for the force to march at daybreak for Abu Klea. Commissariat stores were destroyed and some given away.

Note.—Amount of stores destroyed			3,000	lbs. biscuit.
"	"	"	19,000	" flour.
"	"	"	21,200	" meat.
"	"	"	50	" coffee.
"	"	"	800	" oatmeal.
"	"	"	250	" preserve vegetables.
"	"	"	900	" bacon.

also medical comforts such as brandy, whisky, port, &c.

The machinery of the steamers was disabled beyond repair, their guns being spiked and thrown into the river.

Retreat from Gubat, February 14th.—We marched from Gubat at 6-30 A.M. in the following order:—Heavies and 19th Hussars as advanced guard, then came the Guards' Camel Regiment on foot, now commanded by Col. Mildmay Wilson, lead camels and convoy, Naval Brigade, Royal Artillery, Royal Irish and the Mounted Infantry supplying the rear-guard. Sir Redvers Buller and his A. D. C. rode on ponies with a 19th Hussar orderly who carried a small pennon. We halted on the high land above Gubat, and in full view of Metemmeh. We all thought the General was offering battle, but if that was his intention, the enemy did not accept, not a sign of an Arab could we see.

The march was continued, and we halted for the day at 11-30 A.M. in the bush, having marched about 12 miles. We made ourselves comfortable and fed and chatted and smoked as if the whole country belonged to us. Rumour said now that we were to move against Berber by way of Abu Klea. On the next day (Sunday, February 15th) the column safely arrived at Abu Klea, where General Buller came to a halt, sending on a convoy of about 600 camels, the Guards, Heavies and Gordon's blacks to Gakdul.

The 19th Hussars also marched independently for Gakdul and passed us on the march. The camel were so weak now that they fell down and died one after the other ; I was with the rear-guard this day and counted 70 camels who died between Abu Klea and Jebel Surgam where we halted for the night. On the march next day we met Colonel McCalmont, of the Light Camel Corps, on his way to Abu Klea ; he gave us the news of General Earle's death and victory at Kirbekan, also that 10,000 men under General Graham were on their way to Suakim ; also we heard to our sorrow that Sir Herbert Stewart was dead. On the next day (February 18th) we marched into Gakdul and found that Sir Evelyn Wood and the West Kent Regiment had arrived there and that the convoy of wounded had not left yet.

A startling message came in that night carried by Major Brabazon, that Sir Redvers Buller was surrounded by the enemy at Abu Klea, and he asked for 300 men. The West Kent and ourselves were ordered to march to Abu Klea next morning. However it was unnecessary. Everyone was glad to see Major Wardrope ride in next morning; as he passed us, he called out "all right." The riflemen had annoyed us as usual, and our losses amounted to 3 killed and 22 wounded, amongst the latter, severely, was Captain Walsh of the M. I.

The convoy of wounded with Gordon's blacks (under Gascoigne) with their wives and families started on the 20th for Korti, and on the 21st the Guards paraded early in the morning and marched across the hills along a gazelle track in single file for Abu Halfa wells, which valley with its trees and date palms we reached at midday.

Here we were fairly comfortable, and in small parties we explored the hills about us. Sir William Gordon Cumming kept the mess supplied with gazelle, and Colonel Mildmay Wilson would come in every morning simply laden with sandgrouse. The eleven days we stayed at Abu Halfa passed pleasantly enough, and we began to grumble at having to stand to our arms at 5 A.M.

The "Heavies" passed through on the 23rd, marching for Korti, and sojourned for the night with us; many letters and papers reached us here. Outpost duty was very fatiguing; one took almost all the morning visiting the different detached posts perched on the tops of almost inaccessible hills. We heard that Buller's force had reached Gakdul on the 26th, the enemy having retired. The men now began to grumble and object to the cuisine; the meat had "too much bone in it" and the bread wasn't nice, although baked in our own oven. One day a fatigue party had worked well, and the Adjutant generously treated them to a drink of limejuice, and they positively growled because there was "no sugar in it"—the Adjutant's face was a picture. Having noticed a wady which seemed to lead between hills and among woods in the direction of the Korti road, I explored it one morning having borrowed one of the Hussar ponies, and I found that it was another outlet to the plain.

On March 2nd, half of General Buller's column marched for Korti, and we received orders to march on Wednesday (March 4th).

The mail bags were carried off about this time between Korti and Gakdul, causing great indignation. One night being sent out on the Korti road with a patrol, I halted my patrol in a clump of trees near the track, and when the moon rose sent out a small patrol every now and then in both directions. About midnight, taking a Corporal with me, I patrolled about two miles, when I saw a fire about quarter of a mile from the track. We approached very cautiously and discovered camels; we rode up to the fire, and as we did so some Arabs sprang to their feet, and I then saw that they were Kabbabish Arabs who were in the pay of the British Government. After exchanging the usual compliments of "tayyibeen" (how are you) I went off to my patrol again, no longer wondering how mails got robbed if entrusted to Kabbabish Arabs, and

feeling thankful that I had not ridden in among *unfriendly* Arabs instead.

We marched from Abu Halfa on March 4th and marched that day 20 miles to Magogah wells, passing Sir Evelyn Wood's column on the march. We halted $1\frac{1}{2}$ hours for the men's dinners, and considering the heat and the sand, I don't think it was such a bad performance, although there was a deal of straggling. There was plenty of water here, and the men were put in a good temper on finding the Heavies who were here had prepared their tea for them. General Wood's column arrived into camp from Gakdul as darkness fell, having marched 30 miles in 25 hours. This was very good marching when one considers the heat, the road in some places being loose sand drift, and in others grassy and uneven wadys with occasionally a piece of good going.

Here I had a long chat with Pigott of the M. I. The Guards left Magogah at midnight, March 5th, marching independently off Wood's column, to Korti. El Howyat was reached at 6 A.M. next morning, having done 15 miles. There was plenty of water and a detachment of the Essex Regiment; the wells were protected by a few of Wood's pepper boxes perched on the tops of the hills. We had to eat our dinner in a regular sandstorm, and the desert came in for a hearty cursing from the men. We reached Korti at 4 P.M. on March 9th, very wearied, many men were shoeless; the Nile again was a pleasing sight to us, and on seeing it we stepped out joyfully.

Lord Wolseley was reviewing the Nile column under General Brackenbury (who had taken the command on the death of General Earle) when we marched in. The Gordon Highlanders looked extremely well, to us who presented a ragged and toil-worn appearance, in their bright red tunics and dark green kilts as they swung by to "All the Blue Bonnets are over the Border." The Duke of Cornwall's Regiment presented a motley appearance; some were in grey and others in red. It was very pleasant to encamp under the trees on the river bank and enjoy one's tub in comfort. I rode over to Tani with Major Wodehouse who gave me a mount, and was introduced to General Dormer who was forming a camp there; and I got back to Korti in time to fall in, as we were to be inspected by Lord Wolseley. He inspected us in the usual manner, and we marched past without any band, which of course made a great difference. We mustered only 250 men now. His Lordship then addressed Colonel Boscawen and the battalion:—The Queen, he said, had written to him expressing the pride she felt in the Guards, and asking him to tell the message in person. He concluded by saying that he hoped to lead us in an autumn campaign.

All actual fighting was now over; we had failed to save Gordon, but I am right in saying that we had upheld the honour and reputation of the English army as it *should be* upheld.

The troops were to summer at different points and by brigades along the Nile. The Guards were ordered to Dongola, which place we reached in Nile boats, March 16th, having left Korti on the 12th.

There we encamped on the river bank below the town, and resumed the ordinary routine of camp life. As every one knows, the autumn

campaign was knocked on the head by the Government at home and the troops were ordered to England, the Guards Camel Regiment being among the first to return. I was unfortunate enough to get enteric fever in May. I was sent down the Nile with a sick convoy ; by the time I reached Wady Halfa I was attacked by dysentery, and I did not reach England till August 1st, having missed the review of the Camel Corps at Osborne by the Queen, and the pleasure of returning home with my comrades. For after all, as a brother officer wrote to me, there is a very great amount of satisfaction in marching in with your men after returning from active service and in participating in the welcome accorded by one's comrades and friends ; it is always an event to look back to with pleasure. However it will be long before I forget the Guards Camel Regiment, or the gallant comrades left behind us in the Bayuda desert.

EXETER, October 3rd, 1885.

Note.—It may be interesting to some to know what troops composed the Camel Corps, and Regiments are often confounded together when talking of the Camel Corps.

The "Camel Corps" was divided into three battalions :—

A. *The Heavy Camel Corps*—"Heavies." Commanded by Colonel Talbot. Consisted of officers and men sent from the household and Heavy Cavalry Regiments and the 16th Lancers.

B. *The Light Camel Corps*.—Commanded by Colonel Stanley Clerk. Detachments from the various Light Cavalry Regiments.

C. *The Guards' Camel Regiment*.—Commanded by Lieut.-Colonel Hon'ble E. Boscawen (Coldstream Guards). Composed of detachments from different battalions of Foot Guards, Grenadiers, Coldstreams, Scots Guards and a company of 4 officers and 100 N. C. O.'s and Privates of the Royal Marines.

All the men of the Camel Corps, with the exception of the Marines, came straight out from England for the expedition. The Marines had been serving nearly a year at Suakim with the Marine Battalion occupying the forts of that town.

The "Mounted Infantry" were mounted on Camels also ; their work was that of an Infantry Battalion ; they did no work as Mounted Infantry pure and simple. Finally the camels were only a means of transport ; before going into action the men dismounted and formed up as an Infantry Battalion.

Very strict orders were circulated to this effect.

A certain amount of drill was done to enable the men on the march to be able to increase or diminish front or distances, and "battalion words of command" invariably given. The kit was very light ; not even the officers were allowed to take more than would go in the two saddle bags, across the desert. Tents (the tent d'abri had been served out to the Camel Corps) were left behind.

When on the march the rifles were carried in the "Namarqua Bucket," used by the Mounted Infantry, fastened on the offside of the camel.

I see that Major Kitchener who was with the desert column has delivered a lecture on revolvers.

Complaints were many, in this expedition, as to the bullet being too small to drop an Arab. Also that they got out of order ; as regards the pistol getting out of order, in many cases it was the fault of the owners through not taking proper care.

The fine sand in the Egyptian desert gets into everything. I always kept a silk handkerchief bound round my pistol when it was inside the holster and it never got out of order. Sir Herbert Stewart and his staff carried Lancaster's oval bore 4-barrelled pistols, and it seemed to be the opinion that that was the best pistol by a long way.



23

ES.

to to KALAT

to to ANTIPOPLE

to to ANTIPOPLE



THE SURVEY OF INDIA OFFICES, CALCUTTA, NOVEMBER 1886.



TO KALADY

TO ANTIPOPE
PEA, DOKIA AND PHU

NEV

47

Kara Bouran.

BOSSPHORUS

ANATOLIA

ANTINOPEL

SOUTARI

41

O R A

LONIOA

29

THE SURVEY OF INDIA OFFICES, CALCUTTA, NOVEMBER 1860.

A GLANCE AT THE STRATEGICAL POSITION OF BULGARIA.

By LIEUT. J. McD. BAIRD,
2nd Battalion, Derbyshire Regiment.

THE stirring events which have recently been passing in Bulgaria would appear at first sight to be comparatively unimportant; that they are not so is evident to any one who looks back upon the history of the Turkish wars during the last and present century.

Importance of
Bulgaria.

The subject seems to the writer to be of sufficient interest to merit the bestowal of a little attention upon it. The following sketch endeavours to point out the strategical importance to Russia, of securing the Prince of Bulgaria as an ally, from whose territories, as a base, the Turks may be attacked, without Russian armies being subjected to the dangers and difficulties met with in the past.

Bulgaria viewed
as a Russian base.

To explain the vast difference which a few years have worked, it is proposed to review the subject under two heads:—

Subject divided in two parts. I. *The situation as it was.*
II. *The situation as it now is.*

To begin with—

I. The situation in the past.

In all the wars hitherto undertaken by the Russians against Turkey in Europe, they have had to consider the two important natural obstacles which interposed between them and their goal—Constantinople. These were—

Turkey's natural defences. The River Danube.
The Balkan Mountains.

It will be well to observe the configuration of the Russian bases of operations, and the lines of communication running to the Danube, and thence to the past theatre of war in Bulgaria.

Russian base.

The two proper bases are the provinces of Moldavia and Bessarabia; to speak with more exactness, the river line of the Pruth with Jassy as the chief magazine depôt, and the river line of the Dniester with Odessa as the principal depôt of supply. The resources of Russia can easily be conveyed to these two districts, which are well situated for facility of supply.

A glance at the map shows the advantage of these contiguous bases; they offer powerful flank defence to one another; thus, a Turkish army, intent on invading Russia *via* Odessa, would expose its communications to a Russian counter-advance along the Pruth; likewise, an army advancing up the Pruth, exposes its flank to an army on the Dniester.

Advantage.

Disadvantage. This base has the disadvantage of being quite 300 miles from the theatre of operations.

Having noticed the firm basis from which a Russian army has operated in past times, we will follow them in their first move to the line of the Danube. We can now examine their lines of communication.

Lines of Communication.

Lines of Communication.

(1) From the Pruth.

Two main roads run from this river and the town of Jassy to the Danube; these meet at Fockhani on the borders of Roumania. From Fockhani they bifurcate, one running to Bucharest, and from thence to Krajova, at a distance of about 50 miles from the Danube and practically parallel to it. From this road others run to the river to Vladani (opposite Hirsova), to Kalarasch, Oltenitza, Giurgevo, Turna, Magarelle and Kalafat.

This road running parallel to the Russian front along the Danube facilitated the supply of the army itself being sufficiently protected by its distance from the river, even supposing a body of Turks could cross the river barrier.

The second road runs from Fockhani to Galatz.

(2) From the Dniester a road from Kischenev meets the Danube at Reni, another from Odessa at Ismail and Kilia.

There are good lateral roads connecting the main routes.

In the war of 1877-78, the Russians were enabled to use the railway from Jassy to Galatz-Bucharest-Giurgevo, reducing the difficulties of transport considerably.

The Russians having reached its shores had to take the Danube river into their calculations. A short account of it will not here be out of place.

The Danube first enters Turkey through the Iron Gate, and after pursuing a sinuous course for nearly 600 miles, empties itself into the Black Sea by three mouths.

From its first entrance at Orsova to Widin it is from one-fourth to one-half mile in breadth, between Widin and Galatz it increases to nearly three-quarters of a mile, and finally enters the Black Sea by channels, each about a quarter of a mile wide. From the Roumanian shore there are fewer advantages for bridging than from the Turkish which affords many.

The rivers Pruth and Sereth veil preparations made in them for crossing the Danube in their vicinity. The passage of the river is effected by steamers, by pontoons, bridges of boats and ferries.

The Danube has always formed a formidable obstacle in the path of an invader. In a long river line some weak points must eventually be found, and this river is no exception to the rule.

In addition to its natural defensibility, the Danube has three large fortresses to assist in detaining an enemy, *viz.*, Widin, Rustchuk and Silistria. Fortified places of less strength are Necopolis, Turtukai, Rassova, Hirsova, Matchin, Iskatchi and Tultcha.

Fortresses and fortified places.

II. *The Situation as it is now.*

Bulgaria has hitherto been regarded as a buffer province between Russia and Turkey—the theatre in which many a sanguinary drama has been enacted. With recent events as a plea for so doing, let us for the purposes of this sketch assume it to be closely allied with Russia.

Part II aims at being able to put in a clear way the strategical importance to Russia and the vast saving in men and money, which the acquisition of Bulgaria as a future base of operations would secure to her. No more having to force the difficult passage of the Danube, no longer fearing for her flank from Varna and Shamla, nor having to detach a vast force to reduce the strong river fortresses—these and many more are the advantages which she would gain.

Object of Part II. Previous wars reviewed. In 1790, Suwarrow warred up to the Danube, ravaging the country with fire and sword. In 1828, the Russians under the Czar Nicholas II crossed the Danube at two or three points. The campaign of this year at first was not particularly successful, as the Russians feared to advance, leaving Varna on their flank and rear. Towards the close of the year the place capitulated.

In 1829, Diebitsch masking Shamla advanced on Adrianople, forcing the Turks to make peace. The unhealthy climate played havoc among the Russian ranks. Of the insufficient total of 68,000 men with which the campaign was commenced, only 15,000 could take the field on arrival at Adrianople.

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In 1853, the Russians devoted their efforts to reducing Silistria, in which they failed, and the Turks led by a few Englishmen drove them over the Danube.

1853.

In 1877, crossing at Sistova, the nearest point to their objects Adrianople and Constantinople, the advance commenced but was rapidly arrested by the appearance of Osman Pacha and a Turkish force at Plevna. The Russians could not penetrate into Roumelia although Gourko paid it a flying visit to cut the railway.

1877.

Let us consider what Russia would have in her favour at the outset of a campaign with Turkey, and with Bulgaria in the hands of Russian troops.

base for Russia. A base admirably adopted to her needs.—The river fortresses afford perfect protection to the base line of the Danube; they themselves form large depôts of supply and magazines, and possess railway communication with Russia, by which the main army could be efficiently clothed, fed and reinforced. They have communication by sea between Odessa and Varna, though this route is liable to interruption by Turkish cruisers.

Shamla, Varna, Tirnova and Sophia constitute intermediate magazines, and they are the most important posts in Bulgaria. The railway between Rustchuk and Varna would facilitate supply. Communication is easy between the Danube and the supposed new front of Russia—the Balkans.

The initiative rests with Russia.—Turkey from the same cause as in 1877 would be obliged to defend, her army now as then being greatly inferior in strength to that of Russia. For reasons geographical, they are constrained to meet their foe in the Balkans and draw him on to where they can give battle with a prospect of success.

A Russian General, who is securely based in Bulgaria, and who is ready to cross the Balkans, must first have examined and decided upon a point or points of passage. We will now consider these.

The Balkan mountains extend across Turkey from the Adriatic to the Black Sea. They are from 3,000 to 5,000 feet in height, and are crossed from Bulgaria by several passes. The ascent from that province is much more difficult than the descent into Roumelia. From November to April there is snow in the passes which renders the passage precarious and dangerous.

Vide Sketch Map. A glance at the sketch map will show what courses are open to the Russians :—

I. To advance from Varna and Shamla—

It has been already mentioned that the railway assists in the supply of these two places, and is too far removed from the mountains to be in much danger from a Turkish raid, such as that which Gourko carried out so effectually in the last war.

Three passes lead from this district through the mountains and are practicable for pack animals :—

- (a) Shamla *viâ* Dobrol to Karnabad.
- (b) Varna *viâ* Pravadi to Aidos.
- (c) Varna *viâ* { Misiwri
Nadir Derbend } to Aidos.

From Osmanbazar. II. An advance from Osmanbazar which is within reach of the magazines at Tirnova and Shamla—

- (a) Osmanbazar *viâ* Kasan to Slivno.
- (b) Osmanbazar *viâ* Starrareeka to Slivno.

These passes are also reached from Tirnova.

The path (a) is particularly difficult near Kasan and is turned by the more winding (b).

From Tirnova. III. From Tirnova, which is well supplied by a good road from the Danube at Rustchuk and Sistova—

- (a) *Viâ* Khankoi Pass on Kesaulik.
- (b) *Viâ* Schipka Pass on Kesaulik.
- (c) *Viâ* Lovatz and Trajan on Phillipopolis.
- (a) *Viâ* Lovatz on Sophia.

Lateral communications. A path runs from Aidos *viâ* Karnabad, Slivno to Kesaulik.

Another from Kasan to { Dobrol.
Karnabad.

All these roads or rather tracts through the passes meet at Adrianople.

Two routes to The attack on this place may be expected from one of two routes:—

The Valley of the Tundscha.

The plain of Phillipopolis.

Passes compared. Comparing the rival advantages of the passes leading into these routes—

(A.) The Tirnova-Sophia route is too circuitous, though it offers many advantages from the fertility of the neighbouring plains. A force in the Rhodope mountains would easily threaten the flanks and communications.

(B.) Of all the routes, that taken by Diebitsch's victorious army in 1829 seems of most advantage.

The routes { Shamla
Pravadi } *via* Kopra Koi on Aidos, thence to Karnabad, Slivno and Yanboli on Adrianople. This route is difficult for the passage of artillery and transport—communications liable to interruption from a Turkish force in Burgas, which could be quickly reinforced and might fall on the head of a Corps debouching from the narrow and difficult defiles. Burgas, an important port, is only 12 hours' steam from Constantinople.

The Turkish fleet is superior to that of Russia in these waters. The line Burgas-Aidos was suggested by the French Marshal, St. Arnaud in 1854 as a suitable position for a passive resistance to an advancing Russian army but rejected by Lord Raglan.

(C.) The pass from Lovatz (Loocha) or Selvi, *via* Trajan on Phillipopolis, offers two advantages to an army using it:—

Firstly.—To move down the valley of the Tundscha from Tekke to Yanboli, distant 100 miles.

Secondly.—To advance along the plain of Phillipopolis. From Adrianople, however, this city is distant 150 miles, which seems too far for the rapid moves required of modern armies.

(D.) The Schipka Pass (famed for the severe fighting which took place there in 1877) is by far the easiest to move over, but its defenders, dislodged by a frontal attack, could fall back on their second line at Adrianople, without fear of being cut off.

A Turkish force at Kesaulik and at the mouth of the Schipka can be Probable line of turned from the Trajan, Khankoi and Slivno Passes, advance. although the two latter are impracticable for artillery.

An advance to the line Yeni-Zagra—Yamboli leaves two main routes open for an advance on Adrianople, by the Tundscha valley, and by the railway from Yeni-Zagra to Adrianople. A force detached towards

Kirk Killisseh would cause anxiety to a General in Adrianople for his line of retreat.

A Russian army operating from the Balkans must have many opportunities for throwing a force secretly across those mountains, and following on the heels of a surprised and retreating enemy into Adrianople. The elements of success are theirs if they attempt it. They possess numerical superiority and have the advantages which the initiative confers on their side. Their enemy must have a disseminated force watching every pass into Roumelia. The sympathy of the Bulgarian people would be theirs or could be gained over, as in 1828-29, 1853 and 1876—and secrecy maintained by this sympathy; and their enterprising Cossack scouts would cut telegraph lines and interrupt communications. The success of such an operation must have immense moral effect on an enemy. Napoleon carried his army across the Alps in 1800, into the plains of Italy, in the face of a more active foe, and the issue of the Marengo campaign is well known.

Adrianople, situated as it is at the confluence of the Maritza, Tundscha, and Arda rivers, constitutes the second natural line of defence of the Turks, commanding as it does the roads from the Balkans and that to Constantinople, to which place it is only second in importance, defended, as it would be, by men renowned for their fighting power behind entrenchments; here indeed would the Russians find a second Plevna to reduce before they could continue to advance.

Supposing, however, that Adrianople is lost, the Turks can retreat by three roads to their third line of defence, viz:—

- (1) By Kirk Killisseh.
- (2) By Lule Bergas.
- (3) By the Railway.

This third line is situated on an isthmus, and extends from Lake Derkos on the Black Sea to Bujuk Tchekmedje on the Sea of Marmora—a line 22 miles in length and 28 miles from Constantinople, and connected with it by railway. This position is of a strength equal to that of Torres Vedras, from which Wellesley so successfully defied Massena and no doubt would be stubbornly held.

The city of Constantinople itself is fitted by natural and artificial defences to stand a siege. On the land side there are earthworks, and an enemy attacking by sea must force either the passages of the Dardanelles or Bosphorus, both of great strength. This would not be the first siege which Constantinople has stood. In the ninth and fifteenth centuries it long held out against the Bulgarian and Ottoman invaders.

The writer is aware of the skeleton nature of the foregoing sketch, in which he has endeavoured to indicate the dangers to which a country like Turkey is subjected, on account of the configuration of its frontier.

NOTE ON SOME MATTERS CONNECTED WITH THE FIELD ARTILLERY IN INDIA.

By MAJOR H. T. LUGARD, R. A.

THE only theatres where the Indian field artillery can be employed with advantage (except in expeditions beyond the sea) are—

(i) In India itself ;

(ii) Across the North-West Frontier ;

and since it is now commonly believed that no serious occasion for its employment in India can arise until after a severe struggle and disaster across the North-West Frontier, it behoves us to organize the field artillery in the first instance, specially for service in Afghanistan, with particular reference to the nature and resources of the country, and the forces and armament of our most formidable rival. Viewed in this light, is the present organization the most suitable in every respect ?

Armament.

It is but flogging a dead horse to point out once again how inferior to modern requirements are our present field guns. Hitherto the 9-prs. have undoubtedly been sufficiently powerful for the work required of them ; but it has been well said that India has suddenly come into the position of a continental State, and consequently it will be necessary in future to compare our forces and armaments with those of Russia.

In Table A, appended to this note, the corresponding Russian and Indian field guns are compared ; whilst Tables B and C show their relative accuracy. From an examination of these latter tables, it may be said that the Russian horse artillery 15-pr. is somewhat, and their light field artillery 15-pr. very considerably, superior in range and accuracy to the corresponding Indian 9-pr. ; and that the remaining velocities of their projectiles are higher, and the angles of descent less—both points of great importance in estimating the value of shrapnel fire.

Moreover, there can be no question as to the very great superiority of the Russian guns as regards "shell power." Table A shows that the projectiles of their light field guns weigh about 15lbs. each, as compared with ours of 9lbs. each, and that their shrapnel contains 165 bullets as against 63 in ours. That is to say, their light field guns throw 15lbs. shell with more accuracy and to a greater range than our guns throw their 9lbs. shell ; and that, whilst each bursting shrapnel from our guns releases 63 bullets, each of their's releases 165 ; and the higher remaining velocities and lower angles of descent of their shell allow the bullets to cover a large surface of ground at all ranges.

It will be observed that, in spite of the greater weight of the Russian guns and ammunition, their gun-teams have rather less total weight behind them than is the case with our corresponding guns. This is, of course, due partly to fewer rounds being carried on the gun-limbers, and partly to their gun-carriages and equipment being lighter than ours. In their gun-carriages the recoil* of the gun is transmitted to the carriage through guttapercha buffers, and thus the strain and jar upon the latter is lessened, and it can consequently be made lighter.

Besides the Russian light guns, they have also a heavy field gun throwing projectiles weight $27\frac{1}{2}$ lbs., the shrapnel of which contains 340 bullets, while the weight behind the gun-team (4,626 lbs.) is less than that behind our 16-pr. team (4,769 lbs.)

It may then fairly be assumed that, so far as the *matériel* alone is concerned, our horse and field artillery would meet the Russian artillery at a very serious disadvantage. And this is a matter of the utmost moment, not alone to the artillery, but to the whole Indian army,—affecting the prospects of success in battle, and consequently the security of India itself.† If it be conceded that we are at present behindhand, the question of the rapid re-armament of our horse and field artillery surely becomes a most pressing one.

It is stated that a few batteries of the new 12-pr. breech-loading rifled guns have been ordered from England; but I would submit that all the horse and field batteries in India should be armed as soon as possible with modern field guns; and amongst these should there not be some field batteries armed with a heavier gun than the 12-pr.?

European nations have adopted a heavy field gun with special view to the demolition of field entrenchments by the larger bursting charge contained in the common shell. Of the 35 field batteries (exclusive of *dépôt* batteries) stationed in the United Kingdom on the 1st July 1886, 17 were armed with the 16-pr. muzzle-loading rifled gun; whereas in India at the present moment all the field batteries are armed with practically the same gun, firing identically the same ammunition as the horse artillery batteries; the field battery 9-pr. being 2 cwt. heavier, and having a slightly lower initial velocity than the horse artillery gun.

The arguments in favour of a heavier gun for the field artillery are many. Major Pratt, R.A., in his handbook "Field Artillery," page 219, writes:—

"Can it be maintained that efficacy in fire should be in any way diminished? All experience points in the opposite direction. The increase in range and effect of infantry weapons in recent years has been

* This principle is utilized in a different form (hydraulic buffer, or steel tensile stays) in the carriages for our new field guns.

† The following extract from "Military Resources of Prussia and France" by Lieutenant-Colonel Chesney and H. Reeve is worth reproducing here: "It is well known that the Emperor of Austria attributed his defeat at Magenta and at Solferino chiefly to the incontestable superiority of the French artillery. The splendid batteries of the Austrian Army were mowed down before they could get even within range of the enemy, and a few minutes sufficed to annihilate the horses and render the guns useless."

so enormous that to compensate for it every effort has been made to increase the power of the guns. The contact of masses on the battle-field is now impossible, unless the combat be preceded by an effective artillery fire. The destruction of field entrenchments, which are now a prominent feature in the modern fight, demands a projectile as powerful as can be made. Field artillery then should have the utmost power compatible with the conditions of ordinary mobility, or that which is necessary to bring guns into effective action on the battle-field."

Lieutenant (now Captain) J. K. Trotter, Royal Horse Artillery, also puts the matter very neatly in his prize-essay on "*The rôle of Horse Artillery in a Campaign.*" He says:—

"A gun which is light enough for the horse artillery, that is, for duties requiring the greatest celerity, is manifestly too light for the field batteries,—that is, for duties not requiring the greatest celerity. On the other hand, a gun heavy enough for the field batteries is as evidently too heavy for the horse artillery. The efficiency of field artillery is dependent upon two main principles, which work in opposite directions—that is, mobility and shell-power. The former may be said to be represented in a special sense by horse artillery; the latter by field batteries. Neither principle, of course, can be sacrificed to the other; but of horse artillery, it may be said that, given an amount of shell-power sufficient for the efficiency of the system, it must be combined with the greatest possible mobility; of the field batteries, given an amount of mobility sufficient for its efficiency, it must be combined with the greatest possible development of shell-power. When, therefore, it is found that the duties of the horse artillery can be performed by field batteries, it is reasonable to assume either that the mobility of the horse artillery or the shell-power of the field batteries is capable of further development."

There are qualifying conditions to this in India, such as, difficult nature of the country in the theatre of operations, &c., &c.; but since we are taught that the artillery of the attack should establish a superiority over that of the defence before the infantry advances to effective rifle range, it stands to reason that our armies should have sufficient guns in action, of sufficient shell-power, to effect this if attacking, or to prevent its being effected if acting on the defensive.

The elephant batteries of the Indian army, though called "*heavy field batteries,*" are really batteries of position; and although their mobility would be vastly improved by the substitution of horses of a suitable stamp for the elephants and bullocks, yet they could never have nearly the necessary mobility to manœuvre as "*field batteries*" in front of a highly mobile European army.

"The withdrawal of guns from one portion of the field and their rapid transference to another has been proved to be not only possible but often of vital importance."

Such very rapid transference could not be possible, nor indeed advantageous, in the case of our elephant batteries.

The new English heavy field gun is still in the experimental stage; the original guns under trial (18-pr. Armstrong and 22-pr. Woolwich) required,* from their very high initial velocities, carriages and equipment somewhat heavier than the maximum weight allowed by the

* Proceedings of the Ordnance Committee, Vol. XXII, Part IV, pp 672-74.

Ordnance Committee, and were therefore pronounced unsuitable. A 20-pr. (described in Table D) is now* under trial. In July last year a 22-pr. gun, lined so as to resemble internally this proposed 20-pr. gun, was fired with a charge of 6lbs. of powder and a 20lbs. projectile, and gave† an initial velocity of almost 1,700 feet per second, with moderate pressures in the bore. The carriage and equipment for this gun have been previously tested with the 22-pr. gun, and consequently the whole question of a suitable heavy field gun and equipment must now be very near a satisfactory solution. I venture to think that it would be very desirable to arm a proportion of the field batteries in India with this gun, on account of its greater destructive effect in action, and in order to cope with the heavy field guns which would doubtless be brought against us.

The weight behind the gun-teams is only about 3cwt. more than that behind the gun-team of the present field battery 9-pr. ; suitable horses could be easily supplied by the Remount Department from those bought every year in Calcutta (an ordinary, stout "field battery" horse is all that would be necessary) ; and the country between Quetta and the Helmand, and between Kandahar and Kabul, offers no more appreciable difficulties to such batteries than to the present 9-pr. batteries.

It is a difficult matter to estimate with any approach to accuracy the relative power of field guns, as so much depends upon the efficacy of the shrapnel fire, which again is to a very great extent dependent upon the projectile and the fuze ; but it may be noted that the "muzzle energy" of a projectile fired from each of the undermentioned pieces is calculated to be—

Gun.	Foot tons.
English 9-pr. M. L. R. of 8 cwt. (Indian field battery gun) ...	119
English 9-pr. M. L. R. of 6 cwt. (Indian horse artillery gun)...	121
English 12-pr. B. L. R. of 7 cwt.	253

The muzzle energy of the experimental 22-pr. breech-loading rifled gun of 12cwt. was 468 foot tons, and that of the new 20-pr. will be somewhat less. The heavy field guns of several European nations are compared in Table E.

It must be remembered that by equipping the horse and field batteries in India with modern guns of high velocity and more efficient ammunition and equipment, the power of these batteries in action is increased in various ways. Several writers have pointed out that the increased weight and velocity of modern projectiles will increase the efficacy of shrapnel fire (and particularly of shrapnel burst on graze), and hence the "containing" power of modern field guns will be greater. Moreover, in a theatre of war such as Afghanistan, it must often be difficult to find a suitable position for massing a considerable number of guns in line, and therefore long range, high velocity, and flat trajectory are the more essential in order that, when necessary, fire from the different groups of batteries can be concentrated on any particular portion of the enemy's line. Again, the increased range and accuracy

* Proceedings of the Ordnance Committee, Vol. XXIII, Part II, pp. 309-12.
 † Ditto ditto ditto Vol. XXIII, Part III, p. 670.

may more frequently allow of a flanking or enfilade fire being directed against the enemy's advanced, or attacking, parties. Further, the breech-loading system permits of batteries moving when necessary with guns loaded; and this may be a matter of the very highest importance when batteries are advancing to decisive range under the fire of hostile guns in position. It is undoubtedly a most critical moment for a battery; and the sooner it can reply with an effective fire to the opposing batteries, the greater will be its chance of escaping annihilation.

The batteries of the attack *must* advance to decisive range at a certain period of the fight, and the artillery of the defence will most certainly endeavour to overpower them by a concentrated fire before they can reply effectively from the new positions. The mobility of our field artillery as it is at present leaves little to be desired; but from the nature of the equipment there must always be a certain delay after a battery has arrived in position before the guns can be loaded and an effective fire returned. This delay, besides exposing the battery to great risk, may conceivably be sufficient to prevent an opportune fire being delivered on the occasion of some important, fleeting, emergency. Anything, therefore, which tends to lessen the delay which now exists before a battery can open fire from a new position is surely an important advantage.

In Major Pratt's "Field Artillery," page 123, he writes:—

"In the most recent Russian regulations, it is strongly recommended that a battery should come into its first position *loaded* when under fire of an enemy."

And it is on record that in the war of 1877-78 at least one Russian battery moved on several occasions with loaded guns.

A translation of Captain Politovski's diary appeared in Vol. XI, No. 4, of the Proceedings of the Royal Artillery Institution; and at pages 297-298 there occurs the following:—

"The battery ceased firing, and trotted rapidly across the field, which was intersected with drains,..... and galloped with three others to the railway, placed my battery on the line, and opened fire with shrapnel on the retreating enemy. It may appear strange that I should use this projectile instead of common shell, but I could not help it, because No. 1 gun was already loaded with shrapnel from the first position; and after much firing it is very difficult to unload a projectile from the chamber. But it seems none the less strange to me that in passing over the drains the fuze in the shell was not put in motion by such severe jolting; and later on I discovered that a loaded gun may be moved without any danger; thus when passing the defile of Dalboka, of which anon, all the guns were loaded with shrapnel."

And again at pages 307-308:—

"Moreover, we had already once or twice gone over a long distance with guns loaded with shrapnel, and I am convinced that in case of need one might travel the gun loaded with this projectile securely without any danger for long distances."

The Russians were able to use percussion fuzes in their loaded guns because their percussion fuze is on the Prussian principle with a

safety pin which is ejected by the rotary motion of the projectile on leaving the muzzle.

In our artillery perhaps the Armstrong metal,* "time and concussion" fuze, could be so used, leaving out the separate thimble which contains the detonator for the "time" arrangement, so that only the "concussion" part of the fuze should act?

The occasions when it would presumably be of advantage to move with loaded guns, appear to be, generally, when batteries have to advance to new positions under fire; in making or meeting flank attacks within striking distance; occasionally in pursuits or retreats; in exceptional emergencies on the battle-field; and in cavalry and horse artillery actions. The power to open fire at once from new positions must tend to minimize losses, and to increase the value of the fire in its moral as well as in its material effect; and to be especially valuable for horse artillery acting with cavalry, when the opportunities for effective action are so fleeting. Before moving to the new position, the guns would be loaded, the new range estimated and tangent scales clamped to the required elevation, and, if the interior fittings of ammunition boxes permit of it, other shell fuzeed and prepared for immediate loading. Horse artillery so equipped could act with great daring against an ill-disciplined, immobile force; taking up favourable positions for enfilading the enemy's line, &c., &c.

But I would not be thought to recommend that the fire of horse or field artillery should always be hurriedly delivered; quite the contrary. Only on exceptional and emergent occasions; and even then, once an effective fire had been established, it would of course be immediately steadied down and delivered with all necessary care and deliberation.

Equipment.

Is the present equipment of ammunition-and-store-wagons the most suitable for probable requirements across the North-West Frontier? It is evidently believed to be on the whole the best equipment for the horse and field artillery of the army in England, and India has doubtless adopted it in consequence; but because it is the most suitable for the requirements of the English army, it by no means follows that it is also the best possible equipment for the artillery in India. It may be the best; but I venture to think that it would be worth while instituting a careful enquiry as to the feasibility of carrying the battery ammunition in lighter, less cumbersome ammunition carts, which could travel more easily throughout Afghanistan.

Peace Training.

Field artillery has seldom the opportunity of practising in peace time all that is required of it in war. On the battle-field, when guns are massed, the initiative is taken out of the hands of the majors who have been accustomed to exercise it, and put into the hands of lieutenant-colonels, who have rarely the opportunity to command, even in peace

* In February 1884 Sir William Armstrong & Co. reported to the Ordnance Committee "that as it was thought desirable to test the safety of the concussion arrangement of their time fuze, it was submitted to 400,000 jolts, each 3 inches high; the fuzes were knocked out of shape, but the concussion arrangement remained perfectly safe."

time, more than two, or perhaps three, batteries, and that on a parade ground, where there has been no real enemy, no bullets and shell flying about, no confusion from the presence of a multitude of troops, no serious smoke, no real casualties in men, horses, and *matériel*, and no urgent need of reserve ammunition.

Had war been declared in April last year, many artillery matters would have had to be worked out (so far as the army in India is concerned) for the first time in the presence of an enemy. The tactical handling of guns massed in large numbers; the supply of ammunition to the massed guns from the battery ammunition wagons; the position of these wagons when the guns are in action, who commands them, and are they also massed, and in one or two sections; the system of supply of reserve ammunition from the regimental ammunition columns (themselves purely experimental, and rapidly organized for the occasion); the position of these ammunition columns during an action, and the orders for the officers in command regarding the issue of the ammunition; the replacement of casualties in men and horses to massed batteries; the position of all the spare men and horses, and the method of procuring them at the front as soon as wanted;—all these, and others similar to them, are surely matters of the highest importance, to be thoroughly worked out beforehand, and regularly practised in peace time, so that on the actual field of battle everything shall be familiar; nothing strange or unaccustomed.

There are no detailed regulations for the supply of ammunition, and spare men and horses, to massed batteries in action. Those laid down for a single battery would not apply when many batteries are grouped under one command, and the wagons themselves are more or less massed. It is well known that now-a-days field guns are silenced, not by the destruction of the *matériel*, but by severe losses in men and horses; and in the manual of "Field Artillery Exercises," page 370, it is well laid down that—

"Reserves of men and horses should always be left in hand with the wagons to supply losses in the line of guns. The guns should not have more men actually exposed than are necessary to work them."

—but in the case of batteries massed together for the first time in the presence of an enemy, commanded by officers unaccustomed to such large commands in action, there should surely be definite instructions, in very much greater detail than those quoted above, regulating this extremely important matter?

I would venture most respectfully to suggest that "practice-camps" are required for the horse and field artillery in India similar to those now held annually at Hay and Okehampton in England, but differing from them in that, instead of the batteries arriving successively by detachments, they should all arrive together, and carry out their annual practice together.

These batteries should be completed to war strength for the occasion by temporary transfers from other batteries. At these "practice-camps," the batteries would expend their practice ammunition (all, or a portion of it), under the orders of the lieutenant-colonels, as far as possible

in the manner in which it would be expended in battle. An ammunition column should be mobilized for the occasion, with all the *personnel* allowed for it on active service ; and all questions affecting the supply of ammunition in the field, the number of gunners with each gun at the commencement of an action, the reinforcement without delay of the line of guns with men and horses, the possible improvement or simplification of the harness (in order to more rapidly disengage fallen or wounded horses, &c., &c., &c.) should be thoroughly threshed out ; the final day's practice being perhaps carried out in conjunction with infantry field-firing, the "idea" being a combined attack (using service ammunition) on some well-defined position.

SIMLA :

8th September 1886.

TABLE A.

Comparative Table showing Russian and Indian Field Guns.

[Compiled from Pratt's "Field Artillery," pp. 60-63; and the Journal of the Royal United Service Institution, Vol. XXVII, No. CXX, p. 501.]

Description of Gun.	Calibre.	Weight of gun.	Charge.	Initial velocity.	Weight of common shell (filled.)	Bursting Charge.	Weight of double ring shell (filled.)	Bursting Charge.	Weight of abrapnel (filled.)	Number of bullets.	Weight of case.	Number of bullets	Number of rounds carried on ammunition wagon.	Number of rounds carried on gun and limber.	Weight behind gun-teams (without gunners.)	Number of wagons with a battery.	Number of guns in a battery.	Total number of rounds per gun taken on service.	REMARKS.
HORSE ARTILLERY { Indian, 9-pr. Russian, 15-pr.	...	8	6 1½	1,380	9 7½	...	...	...	9½	63	9½	110	108	40	3,936	9 6	500	...	* English equipment.
	...	8-42	7-1 3	1,350	...	...	15	7	15	165	16	102	90	32	3,784	9 6	539	...	† Major Pratt's and Colonel Sir Lumley Graham's tables do not quite agree in these particulars.
FIELD ARTILLERY { Indian, 9-pr. Light, 15-pr. Russian { Heavy, 27½-pr.	...	8	8 1½	1,390	9 7½	...	...	...	9½	63	9½	110	108	40	about 4,160	9 6	500	...	† Colonel Sir L. Graham.
	...	8-42	9 3	1,450	...	...	15	7	15	165	16	102	90	32	4,096	12 8	573	...	...
	4-2	12-1 4	1,225	...	...	...	27½	14½	27½	340	27	171	54	19	4,696	16 8	520	...	...

The Russian field guns are all breech-loaders of steel. Most of those now in the service were made by Krupp, but some were made in the Obukof works in Russia. They are fitted with telescopic sights. The Horse Artillery gun is shorter and lighter than the light field gun, but the same ammunition is used in both. (For further particulars, see Colonel Sir Lumley Graham's paper on "The Russian Army in 1889," published in Vol. XXVII, No. CXX, of the Journal of the Royal United Service Institution.)

TABLE B.*Comparative range tables for the Indian and Russian Field Guns.*

Gun.	Range.	Elevation.	Angle of descent.	Remain- ing velo- city.	Remarks
	Yds.	° ' "	° ' "	f. s.	
† Indian, 9-pr. ...	500	0 39	1 0	1,164	
• { Russian horse artillery, 15-pr. ...	547	0 39	1 14	1,227	
• { Russian field artillery, 15-pr. ...	...	0 26	0 45	1,302	
• { Russian field artillery, 27½-pr. ...	...	1 7	1 9	1,125	
† Indian, 9-pr. ...	1,100	1 57	2 48	995	
• { Russian horse artillery, 15-pr. ...	1,094	1 40	2 42	1,118	
• { Russian field artillery, 15-pr. ...	...	1 21	1 44	1,181	
• { Russian field artillery, 27½-pr. ...	...	2 18	2 36	1,036	
† Indian, 9-pr. ...	2,200	5 24	8 25	816	
• { Russian horse artillery, 15-pr. ...	2,187	4 29	6 34	944	
• { Russian field artillery, 15-pr. ...	...	4 2	4 54	989	
• { Russian field artillery, 27½-pr. ...	...	5 35	6 52	879	
† Indian, 9-pr. ...	3,300	10 21	17 12	685	
• { Russian horse artillery, 15-pr. ...	3,281	8 9	11 33	805	
• { Russian field artillery, 15-pr. ...	...	7 30	9 39	846	
• { Russian field artillery, 27½-pr. ...	...	9 49	13 16	755	
† Indian, 9-pr. ...	3,500	11 28	19 36	663	
• { Russian horse artillery, 15-pr. ...	4,375	12 42	17 43	716	
• { Russian field artillery, 15-pr. ...	...	11 24	15 44	746	
• { Russian field artillery, 27½-pr. ...	...	15 37	22 3	674	

* Taken from Colonel Sir Lumley Graham's paper on "The Russian Army in 1882" (*vide Journal of the Royal United Service Institution*, Vol. XXVII, No. CXXX, page 502). The French metres changed into English measurement.

† Taken from the official "Hand-book for the 9-pr. rifled muzzle-loading gun of 6 cwt.," dated 1883, page 14.

TABLE C.

Table showing relative accuracy.

50 per cent. of the shots will fall within the length or breadth given ; 25 per cent. within the rectangle formed by multiplying these two dimensions together (*vide* Major Pratt's "Field Artillery," page 64).

Range.	INDIAN, 9-pr.	RUSSIAN.				REMARKS.
		Horse artillery, 15-pr.		Light field, 15-pr.		
Yards.	Length. Ft.	Breadth. Ft.	Length. Ft.	Breadth. Ft.	Length. Ft.	Breadth. Ft.
1,100 ...	40·2	4·3	58·4	2·7	65·6	1·3
1,650 ...	55·2	6·7	77·1	4·9	80	2·4
2,200 ...	75	9·2	81·1	7·8	86	4·7
3,300 ...	135	14·2	108·8	17·4	90·2	10·8

TABLE D.

Table of the new English (Experimental) Field Guns.

[Compiled from the "Extracts from the Proceedings of the Ordnance Committee."]

Description of Gun.	Calibre.	Weight of gun.	Charge.	Initial velocity.	Weight of common shell (filled.)	Bursting charge (steel shell.)	Weight of shrapnel (filled.)	Number of bullets (steel shell.)	Weight of case.	Number of bullets.	Number of rounds carried with gun and limber.	Weight behind gun-team (without gunners)	REMARKS.
	inches.	cwt.	lbs.	ft. s.	lbs.	lbs. oz.	lbs.	Number of bullets (filled.)	lbs.			cwt.	
Light field (and H. A.) gun, 12½-pr. R. B. L.	3	7	4	1,700	12½	1-14½*	12½	216	12½	314	36	33½†	* Bursting charge of cast iron common shell, 7½ ozs. only. † Limited to these weights by the Ordnance Committee.
Heavy field gun, 20-pr. R. B. L.	3.4	12	6	1,650	20	2-4	20	303	20	480	24	40†	

N.B.—The above guns are steel breech-loaders; breech closed on the "interrupted screw" system with the De Bange method of obturation. Two types of gun-carriage were under trial at the end of last year; in one the strain of recoil is relieved by an hydraulic buffer; in the other, by steel tensile stays. The ammunition boxes on the limbers, and the common and shrapnel shell, are made of steel; the common shell, because "cast iron common shell are not strong enough to resist the force of impact into earth when fired from such a high velocity gun as the 12-pr.;" and the shrapnel, in order that it may contain more bullets in consequence of the thinner body of the steel-shell. By adopting steel common shell for the 12-pr. gun, the bursting charge has been increased from 7½oz. to 1lb. 14½oz.

TABLE V.
Comparative table of British and Foreign Heavy Field Artillery.
 [Extracted from the "Proceedings of the Ordnance Committee," Vol. XXII, Part IV, page 674.]

GNS.	Weight of shrapnel shell	Calibre.	Muzzle velocity.	Velocity at yards.			Dangerous space for height of 6 feet at yards.			Rounds carried in limber	Weight behind team (without personal equipment).	REMARKS.
				1,000	2,000	3,000	1,000	2,000	3,000			
BRITISH.	lbs.	inches	ft. s.	ft. s.	ft. s.	ft. s.	yards.	yards.	yards.		lbs.	
	20	3·4	1,650	1,284	1,040	916	81·8	31·6	16·8	24	4,480	
	...	3·6	1,300	1,013	870	762	51·3	21·0	11·8	24	4,769	
	18	3·46	1,457	1,122	951	837	63·6	25·8	14·0	32	4,268	
FOREIGN.	24	3·7	1,453	1,148	997	868	64·5	27·6	14·8	18	5,038	
	18	3·5	1,493	1,127	945	826	64·5	25·7	13·8	26	4,400	
	15	3·4	1,489	1,084	904	779	60·8	23·8	12·5	34	4,268	
	27½	4·2	1,225	1,050	905	785	?	?	?	18	4,626	° Estimated

OCCASIONAL PAPERS.

"SOME REMARKS ABOUT HORSES."

BY MAJOR JAMES FOX BROUGH, K.B., R.H.A.

THE attention which has recently been directed in General Orders to the late Colonel Barrow's excellent suggestions regarding the care and management, on active service, of horses, emboldens me to put the following in writing ; not under the vain belief that what I am about to say is not well known to many officers, but because I am aware, from personal experience, that it is *not* known to all. In the very excellent Cavalry Regulations of 1885, on page 464, relating to outposts, the following is laid down :—

"The horses are never to be unsaddled or unbridled at night ; but during the day, when matters seem quiet, the girths should be loosened and the saddles shifted off *one-third* at a time. The horses' ears pulled, and their legs, bellies, and chests hand-rubbed or wisped, especially in wet weather.

"All feeding and watering is to be carried out by fractions of *one-third* at a time under the superintendence of a non-commissioned officer, who is responsible that no irregularities occur. The horses that are to be fed must be taken a short distance away from the others for this purpose. No horses are to be fed at daylight till the patrols return."

Such regulations are excellently clear and explicit as regards cavalry, but how do they read to many as regards artillery ? On page 372 of the Manual of Field Artillery, where it speaks of the duties of artillery occupying advanced positions on outpost duty, it is laid down that—

"The guns may be unlimbered, but the horses *must not be unhooked*."

Now, this ruling is simple enough as regards feeding, as, of course, to feed a horse in a team, all that is necessary is to take the bit out of the mouth, and ease off the side and bearing reins. Thus, two of the six team horses, or one-third, can be fed at one time.

But watering is more difficult, and how necessary water is to horses on service, to keep in health, Colonel Barrow has clearly shown. It is more especially necessary for horses on service in hot and arid countries such as Afghanistan.

How should it be arranged for ? These are some of the answers I have received on this point : "Water might be brought in the gun-buckets ;" and so it might if it was handy. But it is not so handy as a rule in India, or, as far as I saw, in Afghanistan.

Another reply I have heard is, that "one pair at a time of each team might, if all seemed perfectly safe in front, be unhooked, and sent to the nearest water." This might be done ; but it would seriously cripple the teams, especially with horse artillery ; and another answer, which I should not place on record except to shew what erroneous views officers may take, was : "Unhook one team at a time ;" thus, as was pointed out to the officer in question, virtually putting one gun out of action in case of a sudden advance or retirement.

The case is thus—and let it be remembered that I am only stating it for those who are not acquainted with it :

No artillery should be sent on outpost duty unaccompanied by *spare* horses with harness complete for the teams. Were it left to my judgment, I should say one pair of spare wheel and one pair of spare lead for each gun ; if two guns,—one division of a battery,—are detailed for such duty, and the same number, that is two pairs spare wheel and two pairs spare lead, for a half battery. This arrangement permits the gun-horses being taken out of the teams in turn ; and fed, watered, girths loosened, and saddles shifted, without for one moment impairing the efficiency of the teams. This is simplicity itself ; and I should not venture to place such an apparently simple matter on paper, had I not evidence that officers are not in every instance acquainted with it, probably because they have not thought about it, and possibly because it is, so far as I know, nowhere accurately laid down.

But, whilst on the important subject of the care of horses on active service, I may be excused for offering a suggestion, which is, that every mounted man should be provided with a bandage, and that every non-commissioned officer and man should be taught how to put a bandage on a horse's leg, not by any means such a simple matter as some may think, so that it will not come off.

Horses are, like human beings, liable to fits of cold and shivering, brought on by hard work and exposure to a varying climate by day and night. Blankets are always at hand ; but throwing a blanket over a horse does not keep up the circulation in its limbs. Bandages are requisite to do that. In field artillery there are three drivers, and a mounted non-commissioned officer to each team on active service ; and if each of these were supplied with one good serge bandage, it would be possible to bandage any horse seized with shivering "all round" at once. If in cavalry and horse artillery each mounted man was supplied with a bandage, the supply would be ample, over and above which, if a horse shewed any symptoms of lameness, and he could not be replaced at once, a bandage, properly applied and wetted if necessary, would relieve him till he could be taken out of work. Most of us know what the after-effect is, if we have by force of circumstances to go on riding a horse which has gone slightly lame whilst at work.

And there is yet another point for which I would beg the indulgence of those who may read these lines if I lay it before them. It is the practice which exists in many batteries and cavalry regiments of washing out the feet. Of course such a practice, if the heels and *frogs* be thoroughly dried afterwards, will produce no bad results. But from my experience I think it is very seldom that the frogs, especially the clefts on either side, can be thoroughly dried. And, of course, if *any* wet remains, it tends to weaken these parts. Now, in a stony country, and how stony India, in most parts, and Afghanistan are, is well known, a good *hard* frog is essential to obviate lameness.

The feet can be thoroughly cleaned with the picker and the horse-brush, though I admit, when the country is muddy, water may have to be applied to remove the mud adhering to the outside of the hoof. But to apply water to the frogs and soles at such times is, in my humble opinion, only to aggravate what the muddy ground has already commenced.

Of course, when such a well-known horse-master as Sir F. FitzWygram tolerates washing feet, it is evident, without my remarking it, that what I say about this matter is put forth with every deference. But, after an experience of twenty-two years on and off with mounted artillery in India, I have no hesitation in saying that the "washing out," as it is called, of

crosses' feet, is unnecessary. I have invariably stopped the practice in every hunted battery I have been in; and Principal Veterinary Surgeon Oliphant, when inspecting my present battery last spring, pronounced the frogs of the battery horses as being in excellent condition, and I had exactly the same remark made to me by Mr. Lamb about my battery at Hyderabad in Sind, probably one of the stoniest places in India. The men love to souse a horse's feet with water; but it does not at all follow that, therefore, the operation is either beneficial or necessary. I have certainly found the operation quite unnecessary. The horse brush applied strongly round the coronet and outside of foot, and the picker worked thoroughly in the clefts, and a dry wisp of straw after this, will clean a horse's feet far better than water, and will leave the frogs so hard that they are not liable to get bruised on the stony ground generally found in the East.

NOTES ON SOME CAUSES OF INEFFECTIVE FIRE.

By CAPTAIN J. HAUGHTON, 39th B. I.

It is pretty generally conceded that, although long range fire may be very useful under certain circumstances, yet it is only the fire at short ranges which is actually decisive in result. This is due to the fact that the flat trajectory of the modern rifle renders it possible for a bullet practically to graze the ground up to a distance of about 400 yards from the muzzle of the rifle, *provided* that the rifle be aimed with approximate correctness, or, in the absence of aim, be held parallel to the ground. This proviso is all important, for if the muzzle of a Martini-Henry rifle be given an elevation of only one degree, the bullet will rise to a height of about eight feet, thus leaving a considerable unprotected zone.

At the longer ranges, owing to the fire being less intense, control more efficient, and other causes, every man can fire as he is ordered, and in accordance with previous training, that is his body and eye can adapt themselves to the positions and movements necessary to bring the rifle to the required position; but at the short ranges little or no control can be exercised over the fire; the men are more or less fatigued and have no time or inclination to get into constrained positions, and therefore *they will fire correctly if they can do so conveniently, i.e., easily and quickly*, but if not they will fire at random.

It follows therefore that the result to be attained is, that at the short ranges it should be as easy as possible for the men to fire correctly and at least as easy for them as to fire incorrectly would be.

In order to ascertain how this result may be attained, it is necessary to consider what are the causes which tend to prevent correct firing. Amongst many causes two suggest themselves as being remediable.

These are: first, the physical and mechanical difficulty of obtaining aim; and second, the unwillingness to bring the rifle to the shoulder owing to the injury inflicted by heavy recoil.

With regard to these two points the author of "Fire Tactics" has already pointed out that a full sight is the only one which men can and will take in the heat of action at close quarters, and also that men who have had their shoulders knocked about by previous firing will, in many instances, fire from the hip, when the control of their leaders is no longer possible. There is, however, a fact which he has not, I think, alluded to, and which

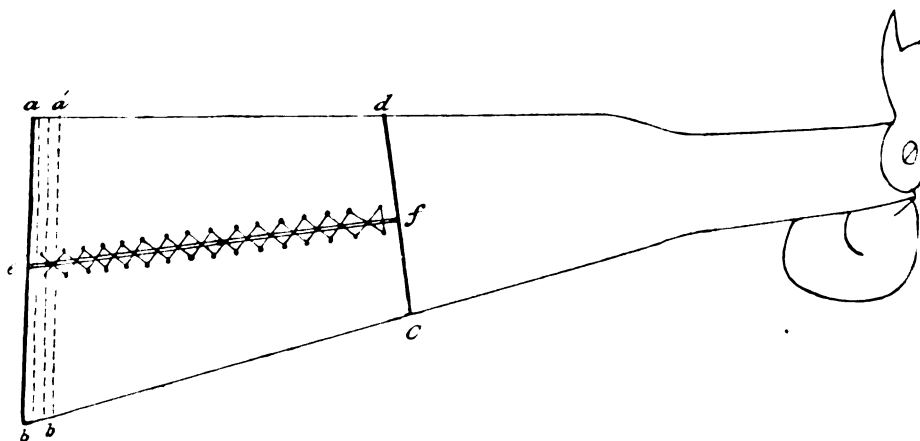
makes it difficult for many men to obtain a quick aim. This fact is that the length of the stock of the regulation rifle is unsuited to a great number of the men using it. We have men varying very much in height, and yet we supply them all with the same length of stock (with the Martini there are two sizes, but this is not enough). Surely this is not much more reasonable than supplying them all with the same size of boots would be.

It stands to reason that, if a man (say) 5 feet 8 inches high requires a stock of $12\frac{1}{2}$ inches, a man 6 feet high will require a longer stock, probably one at least an inch-and-a-half longer. Every sportsman is aware of this fact, and, in selecting a gun or rifle for himself, will endeavour to get one that "comes up well to the shoulder," that is, one that suits his length of limb and general build. Moreover should he attempt to shoot (at anything but a fixed target) with a gun or rifle that doesn't fit him, the results will be unsatisfactory.

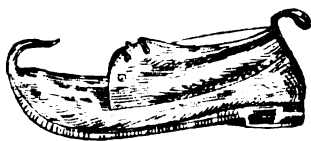
It would, of course, be impossible for the arsenals to issue stocks to suit every individual soldier; but were they to issue stocks of two or three sizes, then, by the addition of an attachable heel plate or anti-recoil pad, every man could be exactly fitted, and a very considerable improvement in the shooting would be the result, though this improvement might not be so apparent in individual firing at a fixed target, where the firer has ample time to adjust his aim and everything else is in his favour.

The following simple contrivance has been found to suit admirably and to be most effective in improving the shooting of a tall man armed with a short stocked rifle:—

A boot of stiff leather is made to fit and lace tightly on to the stock of the rifle. The bottom of the boot contains a sufficient number of layers of India-rubber (probably leather would do nearly as well) to increase the distance from shoulder to trigger to the required length. These "soles" being placed loose inside the boot any number required can be used.



a, b, c, d, leather boot; e, f, lacing; a, b, a' b', three India-rubber soles or pads, the shape of the heel plate and placed loose inside the boot.



3.
*Shoe, Panjab
pattern.*



1.
*Boot, Hindustani
pattern*



4



2

This contrivance not only makes the stock fit but also acts as a perfect anti-recoil pad. The cost is very small, and would be quickly covered by the diminished waste of ammunition. As this false stock could be made of the same sort of material as the men's accoutrements, the appearance would not be bad once the eye became accustomed to it, and at all events appearance should give way to useful effect.

A BOOT AND A SHOE FOR THE NATIVE ARMY.

BY LT.-COLONEL C. W. BABINGTON, 3rd Bengal Infantry.

1. Any one who was at the Delhi Camp of Exercise of 1885-86, and saw the Native Regiments wearing the native shoe, must have observed how unsuited it is for the army.

2. A Native Regiment, wearing these shoes, and having to pass through thorns, became quite disorganised, losing all formation. The men picked their way, as best they could, most carefully through the thorns, somewhat in the fashion a lady would try and get through mud, with her favorite pair of French boots on.

3. At the march-past at the Camp of Exercise at Delhi in January 1886, no one who saw it is likely to forget the mud, caused by the heavy rain, which fell nearly all day. This mud was, one might almost say, "*paved*" with the sepoy's native shoes.

4. It is to endeavour to supply the want of a boot for the Native Army that I now write this little pamphlet.

5. The boot which I propose is nothing more than an ordinary native shoe (Panjabi, Hindustani, or other pattern), with the front lengthened so as to form a tongue to protect the front of the foot as in ordinary English shooting boots. This shoe has a top of soft leather. This top might be made of any soft material, such as strong canvas (white or dyed), soft leather, cloth, &c. I think the boot will do equally well for Native Infantry, Cavalry, Artillery, or Camp Followers.

6. Plates 1 and 2 show the side and front views of the boot I propose. This boot would have two eyes and three hooks in front on each side, to fasten with a boot lace. It would be worn with the *puttee* over it.

7. For regiments wearing gaiters, and preferring something more like a shoe, the shoe (Plates 3 and 4) might be adopted. This would fasten in front with one eye, and two or three hooks on each side.

8. The plates are from photographs kindly done for me by Captain Austin, 3rd Bengal Infantry.

9. The shape of the native shoe, thus made into a boot or shoe, may be objected to, but *many* regiments *now* wear *nothing* but the native shoe; and my endeavour is to give the native soldier, not an English boot, which is not at all suited to him, but a boot or shoe as nearly as possible like the shoe he has worn all his life; and which does not require any socks. A glance at Plates 1 and 2 will show that the plan has been applied to a Hindustani-shaped shoe, and Plates 3 and 4 show it applied to a Panjabi shoe. It might easily be adopted for any other patterns also I presume.

10. The soles of the boots could be strengthened by having large-headed nails put in them, (as was done in the Afghan campaigns by our native soldiers wearing the native shoe), or by screws, &c.

11. The boot or shoe proposed being only the ordinary native shoe always worn by natives, I don't think there is any more fear of their feet

getting rubbed and blistered, than at present with the native shoe. Neither are socks required.

12. Some of the advantages claimed for this pattern of boot over the native shoe, are :—

(a.) It will enable a native soldier to go over thorny ground and through jungle of all sorts with the same impunity as a European soldier can.

(b.) He will also be able to go through deep mud and marshy ground. Now he either leaves the native shoes sticking in the mud, or has to take them off and go through bare-footed, perhaps bruising and cutting his feet against things he cannot see

(c.) It will prevent small stones, sand, &c., from getting into his shoes, on the march, or on parade, as they do at present.

(d.) Worn with either puttees (tied a little way down, and over the boot) trousers or gaiters, it will prevent flies, &c., stinging and tickling the feet and ankles on parade, and enable the sepoy to stand still in the ranks.

(e.) There is little fear of a man wounding his ankle, by cutting it with the sole of the shoe of the other foot, as at present (*especially when he stumbles*). Many men are admitted into hospital with bad ankle-wounds from this cause.

(f.) The front of the shoe and tongue being all one piece, there is no sewing to rub the front of the foot.

(g.) This pattern boot fills up the space, left naked at present, between the trouser or puttee and the native shoes now worn, which naked part gets dreadfully torn and punished in working through thorns, coarse grass, &c., if the men have determination enough to face them.

(h.) A battalion with these boots on will, it is thought, be able to keep a much better step than one with native shoes on, perhaps fitting loosely, with no good hold on the foot. They will also help to save the ankle from being twisted in rough ground.

(i.) Native troops wearing shoes of this pattern would, therefore, be able to march straight to their front through low thorns, &c., just as European troops can, without having to go round them.

13. I think the boot proposed, worn with a puttee, would do very well for Native Cavalry on service. They would then be available for mounted or dismounted duties. For Cavalry, a low, flat heel could easily be added if necessary.

14. The boot should also do for Native Artillery and Camp Followers.

15. The cost of the boots would be about Re. 1-8 to Re. 1-10 for a single pair. Large quantities could doubtless be made up cheaper.

16. I could send patterns of the boot and shoe to any one wishing to see them, provided they agree to pay postage and the price of the boots they may keep.

17. It would surely be well worth Government spending a few hundred rupees in endeavouring to get a proper boot for the native troops.

18. Whilst on the subject of soldiers' boots, I would propose that some of the upper eyes of the present ammunition boot of the European soldier be replaced by a similar number of hooks, as in the shooting boot. It would be quite impossible for a man on service (with his boots off), turned out in the dark, to lace his boots through the eyes at present in the ammunition boot; but he could easily fasten his boots properly in the dark if a certain number of hooks replaced a like number of eyes. Trials IN THE DARK invited!

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THE ORGANIZATION AND OFFICERING OF THE NATIVE ARMY.

BY CAPTAIN G. H. ROBINSON, 1ST BATT., 1ST GURKHA L. I.

THE efficient officering of the native army is such a vital question to the welfare of the Indian empire at the present time that it behoves every man with an idea on the subject to bring it forward in the faint hope of its being one more peg in the coffin of the present system—a system which has shewn itself unable to withstand the strain of the prolonged campaigns in Afghanistan and Burmah, and which will most certainly lead to disaster if brought into contact with an European enemy. It has been a disappointment to the majority of regimental officers that perhaps the most important question in the re-organization of the native army—namely the officering of the native regiments—has been left untouched in the Army Circular of the 13th October last. Most officers admit that there are too few British officers in our native corps, and those there are, are not distributed to the best advantage. In support of the first of these two statements I would quote the military axiom that the less good the material of which your regiments are composed the more numerous and efficient must be your officers. If, therefore, British infantry—pronounced the best in the world by such an authority as Marshal Ney—require 25 to 30 officers per battalion on a war footing, how much more do our native battalions require this number of efficient leaders, and yet they only have eight British and sixteen native officers, the latter generally well on in years, having lost the energy and fire of youth, and wanting in education and intelligence. On a campaign matters become very serious—one British officer is usually left behind at the dépôt, another is told off to act as a transport officer, a third and a fourth are frequently sent away in charge of detachments, often of only 50 to 100 men, *i.e.*, native officers' commands, a fifth gets sick and has to be left behind in a field or base hospital. Thus with the head-quarters there are frequently only to be found the Commanding Officer, the Adjutant, and one or two others. Any one who has campaigned with a native regiment, under the present system, will readily admit that the above is not an overdrawn picture. What would

happen if this battalion was now called upon to take part in a general action against troops trained as modern infantry are trained? Who would lead the "fighting line" and direct its fire? There is not, on an average, one native officer per battalion who is capable of doing this efficiently. The Commanding Officer and the Adjutant would have enough to do looking after the battalion generally. One of the other officers would be in command of the main body, and, if one remained, he would possibly be in charge of the baggage. There would be no one to direct the fire of the "fighting line," and it would be quickly brought to a halt by the unequal combat in which it would find itself engaged, for its fire would probably be quite innocuous for want of proper direction. The remedy for this is, of course, more properly trained officers. Native officers, as a rule, have neither the education nor the intelligence to enable them to be trained to the requisite efficiency. Hence more British officers are absolutely necessary.

Next, as to the distribution of work. In the cavalry, the regiments are divided into four squadrons, each commanded by a "squadron commander," and, besides the commandant and adjutant, there are two* "squadron officers." Of the last named, one is usually a sort of a quarter-master without the name. The other is available for odd jobs. Here the work is fairly well distributed among the British officers. In the infantry, however, things are very different. The organization of a battalion is practically in two huge companies, called wings, of 400 and odd men, each commanded by a "wing commander," assisted by one or two "wing officers," if these latter are available. Besides these there are the commandant, adjutant and quarter-master, who form the staff of the battalion. The responsibilities of command fall somewhat heavily, then, on the wing commanders, for they have to superintend and are responsible for the target practice, field training, and other exercises of their half battalions. They have to keep the records and accounts of their men, are responsible for their payment and supply of necessaries. They have to know all about the qualifications of each individual in their respective commands, so that they may be in a position to advise the commandant as to his fitness for promotion, invaliding, and a host of minor matters. Finally, they have frequently to be in two places at once,—in other words they must neglect one part of their work in order to be able to superintend another; for instance, while a wing commander is away with one double company at field training, the other two companies are left to the tender mercies of their native officers, or, perhaps, of a young probationer. It is laid down, certainly, that the native officers should not be disturbed in the command of their companies, but the wing commander is, nevertheless, held responsible that all goes well.

I have already endeavoured to show that more British officers are absolutely necessary. In the cavalry the increase would naturally take the form of more "squadron officers," so as to give one at least to each squadron, in addition to the adjutant and quarter-master. In the infantry, the increase might take place in two ways: First, by replacing

* Three.

the three wing officers by eight company commanders, who would take sole charge of the eight companies, the wing commanders merely exercising a general supervision, much in the same way as the Majors of a British battalion under the old organization. This scheme would necessitate 18 British officers with each battalion of native infantry, namely, 1 commandant, 2 wing commanders, 1 adjutant, 1 quarter-master and 8 company commanders. The advantages claimed for this proposal are: (1), that every officer would have definite duties in which to interest himself, and the work of the battalion would be well distributed; (2), it would not necessitate a change in the present organization of a battalion of eight companies. Its disadvantages are: (1), very young officers, quite new to native troops, would frequently be in command of companies; (2), sometimes companies might have to be commanded by field officers, unless all superfluous field officers were either pensioned or sent to general duty; (3), in the event of a company commander being absent on leave, on duty, there would only be native officers to take his place; and (4), the inadvisability of superseding native officers in the command of companies of the present strength and organization. These objections are, I think, sufficient to veto this proposal. My second proposal is to split up the present cumbersome wing organization into four large companies, as in the Continental armies, each commanded by a "company commander" who would be assisted by a "company officer," the commandant, adjutant, and quarter-master forming the battalion staff as at present. This scheme would necessitate 11 British officers per battalion, namely, 1 commandant, 4 company commanders, and 6 company officers, including the adjutant and quarter-master, and it would correspond to the organization of the cavalry in four squadrons. The subadars, in this case, would command the half companies and flank sections; the jemadars the centre sections, into which each company would be divided. All native officers, except the subadar major, would perform subaltern's duties, which is what they practically do now. The advantages claimed for this organization are: (1) That seven of the eleven officers would have definite duties to perform, while the remaining four would usually be young officers in reserve learning their work and available to take the place of a senior in the event of the latter being absent or sick. (2) It would give suitable employment to the many majors and captains of the native army, who are at present performing subaltern's duties as wing officers. (3) It would avoid hurting the susceptibilities of the native officers by ensuring to them the same size of command as at present, and similar responsibilities as regards their sections, as they at present enjoy with respect to their companies. The objections to this scheme might appear to be: (1) Change in the present organization of eight companies by doubling them up into four. (2) The difficulty of battalions, so organized, working in brigade, or larger bodies, with battalions of British infantry still organized in eight small companies. (3) The difficulty with which one man would control so large a company as 200 to 250 men on parade or in the field. In reply to the first objection I would urge that, if a change of system is necessary, then the above will be the cheapest and most effective way.

of doing it. With reference to the second, I would point out that there is nothing in the present field exercises for infantry which prevents a battalion working in four strong companies in preference to a greater number of smaller ones, and there are a very few of the antiquated manœuvres in Part III which cannot be carried out by a battalion of four companies. There are one or two which would require modification as far as native infantry are concerned; for instance, from line, "square on the two centre companies" would have to be modified to "square on the right (or left) centre company," when the named company would form the front face, the companies standing next to it on either flank would form the right and left faces, and the distant company the rear face, each company moving as at present. Again, in advancing from line in double column from the centre, the caution might be "two centre *half* companies to the front," instead of "two centre companies to the front." In answer to the third objection I would observe that in the armies of Germany, France, Russia, Austria and Italy the battalions are organized into four strong companies of 200 to 250 men each, and it is a slur on the British officers to think that he cannot command a company of this strength, when the officers of the above mentioned armies experience no difficulty in doing so. One more argument in favor of these strong companies: The more rifle fire tactics are developed the more do they tend to reduce the size of the infantry tactical unit, so much so that the battalion has already practically ceased to be the tactical unit of infantry, and is giving place to the company, but our companies, under the present organization, are not only too small to be efficient tactical units, but there are also too many of them in a battalion for the commanding officers to effectively supervise. If my memory serves me, I think it was Napoleon who laid down the rule that no Commander should have more than four units to look after. Hence everything appears to tend to the adoption of the continental system of large companies led by experienced and capable officers.

Under the organization here proposed a field battalion would consist of a staff and four companies. The staff would include—

Commandant	...	...	1	
Adjutant	...	...	1	
Quarter Master	...	...	1	
			—	3 British officers.
Subadar Major	...	...	1	
			—	1 Native officer.
Havildar Major	...	...	1	
Quarter Master Havildar	...	...	1	
Armourer Havildar	...	...	1	
Band Havildar	...	...	1	
Bugle-Majors	...	...	2	
Band Naick	...	...	1	
Band Sepoys	...	...	20	
Sepoy Bâtimen, Storemen, and Writers	...	...	10*	
			—	37 N. C. O.'s & men.

* Commandant's Bâtimen 2; Adjutant's Bâtimen 1; Quarter Master's Bâtimen 1; Subadar Major's Bâtimen 1; Adjutant, Quarter Master and Mess Writers 3; Storemen 2

Total 3 British officers and 38 natives.

The 38 natives would, for the purposes of interior economy, form a staff section under the subadar major, who would be responsible to the adjutant.

Each of the four companies would consist of a "Company Staff" and four sections, as follows :—

<i>Company Staff.</i>			
Company Commander...	...	1	
Company Officer ...	...	1	
		—	2 British officers.
Drill Havildar ...	...	1	
Drill Naick ...	...	1	
Köt Naick...	...	1	
Sepoy Bätmen,* Writer, Mochi,			
Tailor, and Armourer ...	...	6	
		—	9 Natives.
<i>Each Section.</i>			
Subadar or Jemadar ...	...	1	
Havildars ...	...	2	
Naicks ...	...	2	
Bugler or Drummer ...	...	1	
Sepoys ...	...	50	
		—	56 Natives.

Thus each company would consist of 2 British and 4 native officers, 19 N.C. officers, 4 buglers or drummers, and 206 sepoy. Total 2 British officers and 233 natives. And a battalion of 11 British and 17 native officers, 83 N. C. officers, 16 buglers or drummers, and 854 sepoy. Total 11 British officers and 970 natives.

The lowest administrative unit should be the section ; anything smaller than that would not be practicable. For parade and tactical purposes, however, the section should be told off into two or more groups of from 4 to 8 files each. These groups would be commanded by N. C. officers, and would facilitate the maintenance of fire discipline very much. In order to always have a certain number of trained men in the ranks ready to take the places of these group leaders, I would suggest that at least four men per section should be appointed lance naicks and carefully trained in their duties. Those lance naicks who did not promise to turn out good N. C. officers could easily be sent back to duty as sepoy, all promotions to naick being made from the lance naicks. While on the subject of promotions I would suggest that up to the rank of havildar all promotions should go in the company on the recommendation of the company commander. This would ensure the company commanders working up their naicks and lance naicks, as they would not lose them by having them promoted out of their companies.

The advantage of keeping the battalion and company staffs distinct is that a company or section may be ordered off on detachment without disturbing the staff, or itself being broken into in order that these men may be left behind. It will be observed that the subadar

* One for each of the two British officers.

major is made extra to the company establishments. This native officer has many important duties to perform in a battalion, which are in addition to those of his company, and if his company is ordered on detachment he must delegate these duties to another less responsible subadar, or the company must proceed without him, which is decidedly inadvisable. The havildar major and quarter master havildar are both innovations. The former would take the place of the native adjutant at half the cost, and do the work equally well. The latter would do all the work at present performed by the tindal and a good deal more besides. The two sepoy storemen would be under him in charge of the magazine and half mounting stores respectively. Thus the tindal and his four lascars would be replaced by combatants, who would do the work as well, if not better, and five followers less would accompany a battalion on service.

The drill havildar and drill naick on the staff of each company may be considered superfluous, and so they would be if the present system of training recruits is maintained. Under the existing arrangement the recruit is trained by the adjutant and his staff in the way that officer thinks most advisable; he then joins his company, and his wing commander has another way of teaching his men, so that the first thing a recruit has to learn is to forget a great deal of what he learnt under the adjutant. It may be argued that if the wing commander and the adjutant both kept to the drill book this could not possibly happen. In reply I would urge that there are two or more ways of looking at the drill book instructions, the same as in most other matters. There is a great deal now-a-days left to the judgment of the officer, and very properly so, and officers will judge things in different lights the same as any one else. Under the proposed arrangement the recruit would come under the system of instruction of his company commander from the day he joined, and that officer would be solely responsible that he was properly taught from the beginning. In addition to training the recruits and young non-commissioned officers of his company, the drill havildar would have to keep the company rosters and other vernacular records, while the company writer would do all the work in English, which is at present performed by the pay havildar in the vernacular. The kôt naick would receive a small staff salary for looking after the company stores. It would, I think, be necessary to have a full non-commissioned officer in this position, bearing in mind the fact that the company would equal two of the present ones.

As regards the question of maintaining the numbers of a battalion in the field, the Army Circular of the 13th October, 1886, already alluded to, has linked the regiments of the native army in threes or pairs and arranged for the formation of reserves. This is intended to be ample for the purpose of keeping up the field battalions on a war footing so far as regards the men. A first or regimental reserve of officers would be formed of the officers attached in lieu of those on furlough or leave exceeding six months, and of the four "company officers" of the battalion remaining behind in garrison. A second or general reserve of officers might be formed of officers in civil or

political employ who have not been absent from military duty for say five years, and also of police and volunteer officers who cared to accept commissions in such a reserve.

The great objection to this scheme for the organization and officering of the native army will be, as usual, the one of expense. Let us consider what this extra expense would be. It would practically be the pay and allowances of three young lieutenants per battalion, *i.e.*, about £1,000 per battalion per annum, or £129,000 per annum for the 129 battalions of which the native armies at present consist. If the revenues of the empire could not afford this paltry sum, for the sake of making the difference between inefficiency and efficiency, then it might be possible to curtail some of the expenditure on the administration and departments of the army itself, always bearing in mind that the administration and departments exist for the army and not the army for the administration and departments.

But there is no necessity for the whole of the 129 battalions of native infantry which at present exist, or for the five proposed battalions (1 Gurkha and 4 Sikh), to be organized on the above elaborate system or to be trained to the pitch of efficiency required for the purpose of meeting a European foe. For instance, there is no necessity for a battalion required to perform the duties of a border military Police in Assam, or for the purpose of maintaining order in such out-of-the-way places as Bhuj and Rajkot, to be organized and trained with the object of fighting the troops of our great rival in Asia. To so organize and train them is to institute a Nasmyth hammer for the purpose of cracking walnuts, and thereby incurring an unnecessary expense.

In order to effect a saving, therefore, I am going to take a leaf out of the valuable lecture given by Major Young in the United Service Institution at Simla last year, and divide the native infantry into regular and irregular battalions and "special corps." In order to arrive at an idea as to the numbers to be included in each of these three classes, it must first be considered what force it will probably be necessary to place on the Indus under certain circumstances. Experts have stated, I am given to understand, that an army of not less than 120,000 men is necessary, of which half should be Europeans. Now, such an army could be conveniently and economically organized into eight divisions of 15,000 each, as shewn in the Appendix. A reference to this Appendix will shew that six regular native battalions are required for each division, *i.e.*, 48 for the whole army. But in order that these 48 battalions be maintained in an efficient state during a protracted campaign, every pair of them will require a third battalion in reserve in India, *i.e.*, 24 additional battalions in reserve. Provision must be made, however, for active movable columns in India and other contingencies, for which another 18 battalions might be allotted, thus bringing the total up to 90 regular battalions. These would be permanently linked together into 30 regiments of three battalions each. It would be advisable, as a general rule, to canton the regular battalions at stations having British infantry quartered there; in fact, in order to get the

full benefit of organization, one or two British battalions might be permanently associated with each native regiment of three battalions, thus forming thirty permanent brigades of infantry. These thirty brigades, again, might be formed into ten divisions, Cavalry, Artillery and Sappers, being added in the requisite proportions.

The proposed "special corps" would consist of the Guides, six Pioneer and three Marine battalions. The Guides, I suggest, should be placed under the immediate orders of the Quarter-Master-General in India and be employed exclusively in the duties of intelligence, the officers being ex-officio attachés of the Intelligence Branch of the Quarter-Master-General's Department. The Pioneers to consist of two regiments of three battalions each, namely, one of Muzbi Sikhs for the Punjab and one of Madrassies. One of the proposed new Sikh battalions might conveniently be Muzbi Pioneers, thus completing the Punjab Pioneer Regiment. Another of the Madras battalions might be converted into Pioneers and thus form the Madras Pioneer Regiment of three battalions. The Bombay Marine Battalions already exists, I suggest the formation of a Madras and a Bengal Marine Battalion from existing corps. These three Marine battalions to be trained in submarine mining, and in manning second class torpedo boats for the defence of the coast line and the mouths of the many rivers. The Bombay battalion would have its head-quarters at Bombay, and furnish detachments to Kurachi, Aden and other places of minor importance on the coast line of the Bombay Presidency. The Madras battalion would have its head-quarters at Madras, and would furnish detachments along the east and west coasts of that Presidency. The Bengal battalion would have its head-quarters at Calcutta, and would furnish detachments to Rangoon, Port Blair and other places along the Bengal and Burmah coasts. The establishment of the "special corps" would be somewhat on the same lines as that of the regular battalions. The Pioneer battalions should have a proportion of skilled workmen of different crafts in each "section," so that it could be detached as an independent unit. The Marine battalions would require establishments according to the amount and nature of work required in each case. The Guides would consist, as at present, of cavalry and infantry, and might conveniently have two squadrons of the former and four companies of the latter organized, as here proposed, for regular battalions. They should include in their ranks Asiatics from every part of Asia, also Arabs and Egyptians.

The extra cost of these 100 battalions, so far as regards officers, would be roughly £100,000. The extra cost of the additional 130 sepoy, one native officer and one naick per battalion would come to about as much again. On the other hand there would be a saving effected in the cost of the irregular battalions, of which there would be 34, supposing the extra Gurkha and four Sikh battalions to be raised.

These 34 irregular battalions would give a grand opportunity for the higher employment of the few very capable native officers of the army as suggested by Major Young in the lecture before alluded to. The organization of these battalions would be somewhat on the same

lines as that of the regulars, but there should only be two British officers per battalion at the most, namely, the commandant, who should be a field officer, and the second-in-command and adjutant, who might be a captain. The "company commanders" would be native officers specially selected for capacity for command, and should have the rank of captain or lieutenant given them. In exceptional cases, and if fully qualified, they might be advanced even to the position of "commandant." "Company officers" would not, I think, be necessary for an irregular battalion. The following establishment is suggested:—

<i>"Battalion Staff"</i>			
Commandant	...	...	1
Second-in-Command and Adjutant	...	...	1
			— 2 British officers.
Havildar Major	...	...	1
Quarter Master Havildar	...	...	1
Armourer Havildar	...	...	1
Bugle-Major	...	...	1
Writers, Bâtman and Storeman	...	...	6
			— 10 N. C. O's & men.
<i>"Company Staff"</i>			
Company Commander	...	...	1 Native officer.
Drill Havildar	...	...	1
Drill Naick	...	...	1
Kôt Naick	...	...	1
Writer, Armourer, Tailor and Mochi	...	...	1
(Sepoys)	...	...	4
			— 7 N. C. O's & men.
<i>"Section."</i>			
Subadar or Jemadar	...	...	1
Havildars	...	...	2
Naicks	...	...	2
Bugler	...	...	1
Sepoys	...	...	50

— 56 N. O., N. C. O's & men.

A company of three "sections" would thus consist of 1 company commander, 1 subadar, 2 jemadars, 7 havildars, 8 naicks, 3 buglers and 154 sepoyes. Total 176 natives.

The establishment of an irregular battalion of four such companies would be, therefore, 1 commandant, 1 second-in-command and adjutant, 4 company commanders, 4 subadars, 8 jemadars, 31 havildars, 32 naicks, 1 bugle-major, 12 buglers and 622 sepoyes. Total 2 British officers and 714 natives.

As all but two of the officers would be natives, the clerical work would have to be reduced to a minimum. I have purposely omitted the subadar major, as he would not be necessary to the commandant, the senior company commander at head-quarters being in a position to advise the commanding officer on points concerning the native ranks. The reasons given for the other staff N. C. officers under the head of the regular battalion, would apply equally to the irregular battalion. I have divided the company into three "sections" only for reasons of economy, and in order that the strength of an irregular battalion should not exceed about 700 men.

There are at present only twelve irregular battalions, properly so called,

namely, the six battalions of the Hyderabad Contingent and the six battalions in Rajputana and Central India. The saving effected in each of these would be about 2 officers and 200 men, or £25,000 per annum in all. The saving in the remaining 22 irregular battalions would be 6 officers and about 125 men each, or roughly about £75,000 per annum in all. Thus the total saving effected by the irregular system would be roughly £100,000 per annum as against the £200,000 per annum extra expenditure on account of the proposed regular system, so that there would be a nett extra expenditure of about £100,000, not very ruinous for an Empire.

There is nothing suggested in this paper to prevent the irregular battalions from taking part in Frontier campaigns against natives. For such purposes an irregular battalion would, in many respects, be more useful than a regular one. The only active service in which they would not be able to take part would be against an European enemy, and even in this case there would be nothing to prevent them from being employed on the lines of communication.

The following tables will show the organization of the native infantry as at present exists and as proposed in this paper :—

Present Organization.

CLASS.	Regiments of 3 Battalions	Regiments of 3 Battalions.	Regiments of 1 Battalion.	Total Battalions.	REMARKS.
Gurkha ...	1	4	1*	12	* Second battalion to be raised.
Punjab ...	8	1†	1†	27	† Pioneers.
Bengal ...	6	1	...	20	‡ Guides.
Bombay ...	8	...	2§	26	§ One Battalion Marines.
Madras ...	10	1†	...	32	
Hyderabad ...	...	...	6	6	
Rajputana ...	...	...	4	4	
Central India ...	...	...	2	2	
Total	33	7	16	129	

N.B.—One Gurkha and four Sikh battalions to be raised under the augmentation scheme.

Proposed Organization.

CLASS.	Lane Regiments of three Battalions.	Pioneer Regiments of three Battalions.	Marine Battalions.	Irregular Battalions.	Guides.	Total Battalions.
Gurkha ...	4	...	...	1	...	18
Punjab ...	8	1	...	2	1	31
Bengal ...	5	...	1	4	...	20
Bombay ...	6	...	1	7	...	26
Madras ...	7	1	1	7	...	32
Hyderabad ...	...	...	...	6	...	6
Rajputana ...	...	...	...	4	...	4
Central India ...	...	...	...	2	...	2
Total ...	30	2	3	34	1	134

N.B.—If it is decided not to raise the proposed Gurkha and four Sikh battalions, the Gurkha and three Punjab irregular battalions, as also one of the Punjab Pioneer battalions, would have to be struck out of this table, reducing the total number of battalions by five.

It will be observed, on referring to the table of proposed organization, that proportionally a greater number of Gurkha and Punjab battalions are included in the regular line regiments. This is for the following reasons :—

1st.—They are mostly quartered nearer to the probable theatre of war than are those of Bengal, Bombay and Madras.

2nd.—By far the greater number of the British battalions, which would be brigaded with the regular native battalions, are quartered in Northern India, and this would facilitate the permanent organization into brigades and divisions.

3rd.—The Gurkhas, Sikhs and Punjabis are undoubtedly the best fighting material to be got in India, if not in Asia, and hence the advisability of employing as many of these battalions in the front line as possible.

As regards the cavalry, no very great change in the organization would appear necessary. The regiments are already organized into four squadrons, each commanded by a British officer. All that is wanted then is to add three more squadron officers to each regiment, and to group the latter into brigades associated with the British cavalry regiments quartered in the country, of which there are nine.

There are in all 40 native cavalry regiments besides the Guides, namely, 19 Bengal, 4 Madras, 7 Bombay, 2 Central India, 4 Hyderabad Contingent and 4 Punjab Frontier. It would be convenient to group them into nine brigades of four regiments each, corresponding to the nine British cavalry regiments. This would absorb 36 regiments. The remaining four, which might conveniently be the Hyderabad Contingent regiments, would be irregular corps with only two British officers each. Each group of four could place three regiments into the field, which would be the complement of a field division, as shown in the Appendix. The remaining one would form the feeder in cantonments.

In conclusion, I would suggest that greater care be observed in selecting non-commissioned officers for the commissioned grades. Commanding officers are but human, and good worthy old havildars are frequently recommended for promotion to native officers who are in no wise capable of taking upon themselves the extra responsibilities. If Boards, under orders of General Officers commanding divisions and districts, were assembled for the practical and oral examination of havildars, recommended for promotion by commanding officers, somewhat in the same manner as examinations for native adjutants are now held, we should see far greater intelligence and ability in the commissioned grades than is now the case. From the native officers, so promoted, there would be no difficulty, I feel sure, in selecting thoroughly qualified squadron and company commanders for the irregular regiments and battalions.

DHARMSALA, 6th January, 1887.

APPENDIX.

The Suggested Organization of a Division.

DIVISIONAL STAFF.

Cavalry Brigade.

Brigade Staff—

- 1 Battery, Royal Horse Artillery.
- 1 Regiment, British Cavalry.
- 3 Regiments, Native Cavalry.

Artillery Brigade.

Brigade Staff—

- 4 Batteries, Royal Field Artillery.
- 1 Battery, Royal Mountain Artillery.
- 1 Battery, Native Mountain Artillery.

Sappers and Miners.

- 1 Company, Native Sappers and Miners.

Three Infantry Brigades.

- 3 Brigade Staffs.
- 6 Battalions, British Infantry.
- 6 Battalions, Native Infantry.

On the cavalry brigade being detached, one native regiment would be left behind as divisional cavalry.

An army corps could be formed by assembling two divisions, in which case the two cavalry brigades, less the divisional cavalry regiments, would form the cavalry division, and two Field and one Mountain battery would be taken from each division to form the "corps artillery."

An extra company or two of Sappers and a battalion of Pioneers could be added if considered necessary.

THE SUPPLY OF AMMUNITION IN ACTION.

By COLONEL W. LUCKHARDT, C.B.

THE progressive improvement made in fire-arms has naturally increased the difficulties of the supply of adequate ammunition. So much was the correctness of this axiom recognized that, at the time the breech-loaders were invented, there was a general hesitation to introduce them, since it was feared that the rapidity of loading would result in the soldier soon finding himself without ammunition. The Prussians were the only nation who set aside these apprehensions; and to the surprise of every one, the Prussian-Austrian war showed results diametrically opposite to the general anticipations, for it was found that the expenditure of ammunition was less in the case of the breech-loader than in the muzzle-loader. Strange as this result may appear, it was only the natural development of the superiority of the needle gun, since two or three volleys sufficed to cause such terrible losses to the Austrians in the close formations to which they had adhered, that columns were swept away as soon as they appeared. However, already in the Franco-Prussian war of 1870-71, when such a decided inequality of weapons did not exist, and when breech-loader was opposed to breech-loader, instances occurred in which want of ammunition was seriously felt. But these were of a more or less isolated character, and it was left to the Russo-Turkish war of 1877-78 to show how intimately connected an adequate supply of ammunition is to the successful carrying out of operations. As the great attention and consideration since bestowed on this question by the European armies are chiefly due to the experience gained during this campaign, it may be of interest to go into details of the conditions which prevailed at the time. The Russian Infantry entered into this campaign with 60 cartridges per man, as pocket ammunition. A further supply was carried in 12 ammunition waggons in the case of regiments composed of 16 companies, and 9 ammunition waggons for those regiments which had only 15 companies. Each of these waggons carried 14,000 cartridges; and as only one waggon followed the battalion in the battle, a regiment with 16 companies had 23, and that with 15 had 18 cartridges actually available in the battle-field, in addition to what the men carried, representing a total of 83 and 78 cartridges respectively per man—a figure below that fixed as pocket ammunition in other armies at the time. For instance, in Italy 88 and in Germany 80 cartridges were carried by the men. Even in the first battles of the campaign, this insufficient supply of cartridges proved itself very detrimental. Throughout the fighting at Plevna, the constant complaint was made that troops had found themselves without ammunition. To remedy this defect, additional cartridges were issued, and the men were ordered to carry them in their

havresacks or in the pockets of their great coats, and in this manner the number of cartridges actually carried by the men rose finally to 200 rounds. The Guards entered the battle of Gorny Dubjack with from 90 to 105 cartridges per man ; yet, although this was a considerable increase on the number first carried, namely 60, ammunition ran out. The reckless firing of the Turks, even at distances far beyond the range of their rifles, exercised a detrimental influence upon the Russian soldier, who, in consequence, fell also into a similar reckless habit of firing carelessly and beyond the range of his rifle ; and this is clearly demonstrated by the total expenditure of ammunition, which amounted in the aggregate in 27 divisions to 47 cartridges per man, and ran as high as 67 cartridges per man in 14 of these divisions. In the Rifle regiments, this number was further exceeded, being 143 cartridges per man. The largest regimental expenditure took place in the following instances :—

94 cartridges per man in the battle of Kara Hassankiri by the 140th regiment ;

122 cartridges per man in the Shipka defile by the 13th Rifle regiment ;

121 cartridges per man at Seinova by the 11th Rifle regiment.

These numbers are extremely high when compared with the results of the war of 1866, in which the expenditure amounted to only 6 cartridges per man in the Bohemian army and 11 per man in the main army. At the battles of Nachod and Skaltiz, the expenditure was from 22 to 23 cartridges per man.

Consequent upon the experience gained in the Turkish war, a considerable addition in the quantity of the pocket ammunition of the Russian Infantry soldier was decided upon. The latter carries now 84 cartridges in the following manner :—

30 in each of his two ammunition pouches,

24 in a special compartment of his baggage bag,

making a total of 84 cartridges, which weigh 3·3 Kilogrammes, and with packing materials 3·61 Kilogrammes (1 Kilogramme is equal to about 2lbs. in English weight). Each of the two ammunition pouches is divided into five partitions, of which, each partition suffices to hold one packet of 6 cartridges. In order to be, however, in a position to make the soldier carry occasionally additional cartridges, two large side pockets have been provided for in the blouse, which has lately been substituted in place of the tunic formerly worn. Every company possesses, moreover, an ammunition waggon, which carries 60 additional cartridges per man. The Russian soldier, therefore, may be said to have at his command in battle, a total of 144 cartridges, which is much in excess of that of other armies. As a further reserve, 52 cartridges per man per Infantry and 54 per man per Rifle battalion are carried in the Divisional Park, and 10 more cartridges per man in the Movable Park. The total equipment amounts therefore to 206 and 208 cartridges respectively per man. For general comparison, we quote below the

total amount of ammunition at present carried in the field with the different European armies :—

England ...	...	...	160 rounds.
Italy ...	...	...	171 "
Germany ...	...	...	171 "
France ...	...	...	174 "
Switzerland ...	...	...	200 "
Russia ...	...	...	208 "
Austria ...	...	...	234 "

Of the above, the following number of rounds are carried by the men personally :—

England ...	...	...	70 rounds.
Italy ...	...	...	88 "
Germany ...	...	...	80 "
France ...	...	...	78 "
Switzerland ...	...	...	100 "
Russia ...	...	...	84 "
Austria ...	...	...	70 "

The manner in which the replenishment of ammunition is to be carried out is not yet decided upon. General Baron Sadtler has recommended pack horses to be substituted for the waggons ; and he supports his recommendation by the fact that the Turks used the former with much success during the campaign. Hitherto the replenishment of ammunition in the skirmishing line was left to the men themselves, but this mode was found to have grave disadvantages, since it lessens the strength of the skirmishing line considerably, and, moreover, offers the men an excuse to quit their places at critical times. To enable this work, however, to be carried out by bringing up the ammunition waggon into the line of fire, is not considered feasible on account of the difficult nature of the ground which is now generally chosen for Infantry fighting.

The system of carrying reserve ammunition in special waggons prevails generally in the European armies at present ; but much diversity of opinion exists as to whether these waggons should be massed together and kept at the *queue* of the brigade, or whether each battalion should have independent charge of its reserve ammunition. In the German army, the former system prevails, but General Verdy du Vernois is averse to this, for he states in his "Studies on leading troops," as follows : "The Infantry ammunition waggons should now-a-days never be separated from their battalions. At present, in accordance with instructions, the waggons of a brigade are to be massed together and be made to follow the brigade ; and it is ruled that only when a battalion is detached, its waggon is to accompany it. But it appears decidedly preferable that each battalion should always have its ammunition waggon with it, as circumstances may often occur when it may have to be suddenly detached in the course of the battle, and its waggon be not found ready at hand to follow, and thus the battalion may find itself permanently separated from its ammunition." The same system of keeping ammunition waggons massed per brigade obtains in the Swiss army ; and Colonel Bluntschli in his "Zeitschrift für Artillerie und Genie," May 1884, in dealing with this subject, expresses himself

much to the same effect, and he says: "It appears a more preferable system that each battalion should always have its ammunition waggon (first reserve) with it. Such a course will ensure the certainty of the supply being forthcoming when required, and it appears the more commendable for the reason that, if these waggons are massed together, they offer a good object for a sudden attack by the enemy's Cavalry, and they are in this manner further more exposed to destruction by the enemy's artillery than would be the case if they were separately posted." As Colonel Bluntschli gives in the same article the establishment maintained for the first reserve, we take this opportunity of quoting these particulars.

		<i>Per Battalion.</i>	<i>Per Brigade.</i>
Non-Commissioned Officers	...	1	6
Armour-Sergeants	...	2	12
Watchmen	...	3	18
Lance-Corporals	...	1	6
Transport drivers	...	4	24
	<i>Additional per Regiment.</i>		
Sergeants	...	1	2
	<i>Additional per Brigade.</i>		
Transport Lieutenant	...		1
Guides	...		2
	Total	..	71 men

(viz., 1 officer, 8 non-commissioned officers and 62 men), with 12 half caissons (2 per battalion, each containing 12,000 rounds, total 35 rounds per man) and 6 Fourgons (carrying entrenching tools) and 42 draught and 3 riding horses.

Referring now to our army in India, the number of cartridges to be carried by the men is fixed at the same figure as in our Home army, viz., 70 rounds—20 in each of the two side pouches and 30 in the reserve pouch. In addition to above, 30 rounds per rifle are carried as the first reserve, and 100 rounds per rifle as the second reserve, and for their carriage, 20 and 67 mules respectively are provided for in the Equipment Tables. It will be observed from the above that we are generally, and especially so, in comparison with the Russian soldier, at a disadvantage so far as ammunition personally carried is concerned; that, however, we are on the other hand provided with a much more suitable mode of transport, by employing pack instead of draught carriage for reserve ammunition. To deal with the former subject first, there appears no tangible reason why the number of rounds personally carried should not be considerably augmented. On the contrary, the deductions arrived at as the result of the Russo-Turkish war amply warrant the introduction of the necessary modifications at once, and we should not wait to be taught a practical lesson and thus purchase the needed reform at the cost of bitter experience. Moreover, we believe that whatever considerations led to the fixing of the personal equipment at 70 rounds for our Home army, they do not now apply to our army in India, since there exists the most palpable difference: that on Home service the man is obliged to carry his own kit, whilst in India it is carried for him. This factor should not be

lost sight of, for it is patent that, under such circumstances, a comparison of the proportion of ammunition carried by the army in India with that fixed for our Home and other Continental armies cannot be justly made; and as a man carries nothing except his own clothing and accoutrements, there should be no hesitation in increasing, very considerably, the number of rounds carried by him. The grave disadvantage under which our troops now go into battle would be immeasurably increased were repeating rifles introduced, as they should be, in our army; when with a repeating apparatus containing 10 cartridges (this brings the ordinary number which it is considered a repeating rifle should have) a man would find his cartridge supply very soon exhausted, and ordinary reflection must tell us that a conclusion would be forced upon him that it would have been far better for him had more attention been paid to his efficiency in battle than to his personal comfort.

To deal now with the second subject under consideration, namely, the reserve ammunition. It has been shown above that 20 and 67 mules are allotted to each Infantry regiment for the carriage respectively of its first and second reserve ammunition, and that those two reserves combined provide the regiment with one hundred and thirty rounds per rifle. It is obvious that our mode of conveyance of the reserve ammunition is superior to that generally adopted in Continental armies, *viz.*, wheeled carriage. The objections to the latter have already been dealt with in general terms, and for the reasons therein shown the fact is established that all the disadvantages connected with such a system disappear in the case of the pack mules. A good many additional arguments, however, might be adduced in favour of pack transport for reserve ammunition. For instance, if a waggon breaks down, or its horses are killed or otherwise disabled, a very considerable portion of the ammunition is at once lost to the regiment, whilst in the case of pack animals, the distribution connected with it makes the loss of a few animals, comparatively speaking, a trifling one. Again, our system of pack and the description of animals used for the purpose, *viz.*, mules, has undergone so many trials and experiments, that it may be safely asserted that perfection has been reached in this direction. So far, therefore, our Indian army may look with satisfaction and entire trust to the way and manner in which Government has arranged for its supply of reserve ammunition, which it can depend on with certainty, as it will be forthcoming and ready at its disposal in any situation in which the army may find itself. This, we would submit, is a matter of very great consideration to an army. It is obvious that, together with the introduction of arms of precision, the nature of the battle-field to be selected has undergone considerable modification; and an attacking army will, doubtless, have a much greater chance of success if it selects for its operations broken ground, which will offer it manifold advantages and enable it to approach and engage the enemy without the terrible losses, which, a plain offering no protection, would entail. Such ground offers naturally an insuperable obstacle to wheeled carriage following the troops, whilst a pack mule can get over any ground the Infantry gets over; and on account of its mobility, be readily placed in a position of

shelter and advantage. Under these circumstances, the question of the ammunition being forthcoming rests entirely with the troops as to whether they fulfil their part of the work in maintaining the materials placed at their disposal in a condition of efficiency; as it is manifest that if, through neglect in the feed and keep of these animals, they become unserviceable and have to be dropped behind, this is a result for which the troops have to blame themselves. It appears a matter of considerable uncertainty whether sufficient attention is paid to, and interest taken in, this matter at present. There can be hardly any doubt that a commanding officer would be in a state of great excitement if he found that a rifle of one of his men could not be worked, owing to its mechanism having been spoilt by rust—the result of neglect: such a state of affairs can scarcely be imagined. But a little reflection would conclusively show that one rifle having been thus rendered unfit for work is comparatively a trifling matter to the loss of a pair of ammunition boxes, which have to be left behind owing to the mule having been disabled through sore back, brought about by neglect; as the loss of 1,200 rounds of ammunition may have a serious influence on the success of an attack, which can scarcely result from the loss of a single rifle. The late Camp of Exercise offered a good opportunity of arriving at a fair and reasonable judgment on this point. A number of mules were handed over to regiments for the conveyance of ammunition, to all appearance in very good condition, but they did not remain so throughout the course of operations in consequence of abrasions, caused evidently through bad packing. Assumed that the packs had been properly adjusted before setting out for the day's work, which appears more than doubtful, since there are very few officers in our army who have undergone a course of instruction and thus acquired the necessary knowledge to enable them to form a proper judgment on this point, loads became loosened during the march. Again, instances occurred in which troops had occasion to have recourse to their ammunition; and to enable this to be effected, the boxes had to be taken off, thus upsetting the original loading arrangement. Want of trained supervision and leaving the work of re-adjustment of the loads to the men told off for escort, who are either too ignorant or apathetic and, moreover, look upon keeping up with the regiment as their primary duty, and thus cause the animals to trot with unadjusted loads to get them in their proper places, must cause abrasions. It appears very desirable that the difficulty, if not impossibility, of replacing animals rendered unfit in this manner should have more attention paid to it. To obtain better results in this direction, it seems advisable that on marching out parades connected with field manœuvres, a certain proportion of mules wherever available, be taken out with the regiment, when the regiment should be held responsible for their return in good condition. There is another point in which improvement is evidently needed, namely, the distribution and position of drivers. The transport follower, as he stands at present, is not an enlisted man, and it seems more than doubtful whether, under these circumstances, that discipline could be expected from him, which alone would ensure a man remaining in his position in the

hour of danger, as it is generally an accepted fact that disregard of danger can only be overcome by the power that discipline enforces on a man's will. But even allowing a man's readiness to do his part, it is questionable whether the work expected from him is not too much. The ordinary complement of a driver to three mules may, for all purposes, suffice for peace manoeuvres, but to any one who has a knowledge of how untractable a mule becomes when it is suddenly frightened, it must appear a more than doubtful matter whether a muleteer can efficiently control three animals in all the tumult and noise which is inseparable from a battle. If these conclusions are accepted as true, does it not become a necessity to remedy matters by placing these drivers on a more satisfactory footing by enlisting them and by making a more convenient distribution of animals in their charge. Although we have already stated that mules afford undoubtedly the most efficient description of transport for replenishment of ammunition, the question arises whether the thing is not overdone by allotting pack animals for both the reserves, since it would appear to suffice, if this description of transport were resorted to, for the first reserve only which is required with the regiment, and not for the second reserve which will be kept parked with the baggage, etc., and consequently out of the zone of fire. The considerations which render the use of pack transport in the front line so efficacious, here cease to be of any import. It becomes a question whether, under these circumstances, draught carriage for the second reserve is not preferable. The advantages it offers are obvious, as it admits of a much larger quantity of ammunition being carried. Our Light Army Transport carts are fixed at a carrying capacity of 6 maunds or 6 boxes; and as one mule in draught is equal to three in pack, treble the amount, now carried as a second reserve, might in this manner be carried. Double-draught carts might even be substituted with advantage for the single-draught ones now in use. Whether we introduce repeating rifles or not, the fact that, already under the present circumstances, it would be unwise to limit the quantity of ammunition to be carried within the lines of other Continental armies, becomes plain when we remember that our troops will be more or less constantly employed throughout a campaign; whilst with the large number employed in European warfare, a constant change of the troops actually engaged necessarily takes place.

Closely connected with the question of ammunition is the subject on which of late a good deal of controversy has taken place, namely, should we adopt long range fire tactics, or restrict ourselves to short range tactics, and train our troops accordingly. It appears scarcely feasible to treat this matter by itself, since it is apparent that a question of ammunition is involved therein. The chief reason for which the fire at long ranges can be condemned, is the fear that troops may fire away almost all the ammunition in their possession, forcing them to enter the contest at close quarters with an inadequate supply. Another reason adduced against long range fire is that it is likely to unsteady the troops by tending to make them fire at distances which are actually beyond the range of the rifle. This point, however, deserves scarcely to be dealt with,

since it is evident that only troops very badly trained should be liable to yield to the temptation of firing away at distances beyond their reach; for it is only natural to assume that men so imperfectly trained would also obtain no result at closer distances, as their unsteadiness would prevent their taking aim. This subject, however, shows itself in a different light when troops have been properly trained, and turn out more or less good marksmen, for, whilst on one hand an army will always despise an opponent who fires ineffectually, casualties obtained by a well directed fire at long distances must tell, and must have a demoralizing effect on the enemy. Hence an effective fire at long distances must render good service in the way of preparing for the final assault—an advantage which should not be thrown away. It will be seen that in touching upon this point, the special circumstances, such as are involved in offensive and defensive tactics, have not been taken into consideration. In the latter position, no shortcomings in the way of ammunition should be allowed to take place, since it is selected with the view of obtaining the best possible advantages which modern arms, namely, arms of precision, rapidity of fire and long range capacity, offer. Hence as such a position is carefully selected, it will be adhered to throughout the fighting as much as possible, and consequently not be subject to the sudden changes which must occur in offensive tactics which would frustrate any preparation made beforehand. We would further advance that although an axiom may be acknowledged as a correct one for one army, yet it may be totally out of place with another, and consequently any difference in organization should have due attention paid to it before deciding as to whether it is applicable or otherwise. If a man is only relatively a short time serving with his colours, it is patent that his training and instruction must be confined within certain limits, and can, therefore, not be conducted on such a broad basis as a relatively long service will permit. Other armies with a short period of service consider it doubtful whether it would be preferable to train their men both at long and short ranges, or restrict them to the short range only, in order to obtain efficiency in the latter instead of indifferent results in both; but such reflections are obviously inapplicable to our army in which the men serve for a longer time. Here we approach a subject which also does not strictly lie within the scope of this article, yet is closely connected with the subject under consideration, namely, whether our present musketry instruction is in every way a satisfactory one? Undoubtedly very considerable progress has of late been made in this matter; but when we reflect that it is of paramount importance that we should not alone be satisfied with good results but strive to attain better ones, we should not stop here. Only a man who has confidence that his bullet will hit, will be careful of his ammunition, while to a bad shot, the loss of one or more rounds from his pouch must be a matter of indifference, since he can place no value on it which would make him careful. There are two points in which improvements seem to be feasible. In the first instance, it appears faulty that the musketry course should be confined within a certain period. It is apparent that to make a man fire a fixed number

of cartridges, day after day without taking any cognizance of the fact as to whether the result has been good or bad, must tend to lower the results which would be obtained if more time was given, since after a day's bad practice it is desirable that a pause should be made to allow the man to recover himself and regain confidence. In Native Infantry regiments, it is now common for two parties to fire at the same time, under the superintendence of one European officer, and as the latter can only pay attention to one party at a time, it is evident that particular care is not bestowed upon the subject. The capability of being a marksman and of acquiring high efficiency in shooting is *primâ facie*, a qualification in a soldier which can only be obtained by long and careful training ; and the fact that this turns a man into a good soldier, should be held constantly to his view ; but this end can only be achieved by letting him fire all the year round. If this is conceded, the question coupled therewith might receive consideration, namely, whether it would not be advisable to augment the number of cartridges now allotted for practice, in view to facilitate the opportunities of learning to become a marksman. The importance of this subject is fully recognized by our present Commander-in-Chief, as clearly demonstrated by the fact that he gave the full weight of his influence in the public speech which he made before he left for India, by recommending a greater liberality being exercised in this matter ; but although concessions were made in consequence, these appear open to further improvement, for progress in weapons must naturally go hand in hand with superior training of men, and this, it is submitted, can practically be only accomplished by a liberal allowance of ammunition.

SOME SUGGESTIONS WITH REGARD TO THE ATTACK FORMATION.

By LIEUT. G. CHENEVIX-TRENCH,

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The idea of suggesting some remedies for some of the most obvious faults in our present system of Attack Formation originated in my mind from a leading article of the *Pioneer* of the 31st March, 1886, in which it appears that the general idea of distinguished Generals is, that a more orderly method of advance than the present one is required; so as a preface to these suggestions I cannot do better than quote some extracts from the article in point.

"It will be observed that, while Sir Gerald Graham stands up for the square formation in the particular case he had to deal with, he quite admits that, as against a civilised foe, meaning thereby a foe armed and drilled like ourselves, and having the usual amount of nerves, the open formation should be adopted; but we infer him to imply that the advance should be made in some more orderly way than that which we have adopted from the Germans. * * * It has to be borne in mind that the German system has never yet had a thorough trial. The French, after the first two fights, were disheartened, and did not make a firm stand; the Russian attacks in the war of 1877 were not against other troops standing up in the open, but against intrenched positions; so that it may be said that the tactics for the future have yet to be put to the proof. * * * This is not the place to do more than touch on the application of this discussion to the circumstances of the Indian army and the trial on which it may be called before long to enter; but it is well known that, in the opinion of the Foreign officers who were present at the late manoeuvres, our formation, apart from any question of musketry fire, is too thin to meet the solid ranks of the one adversary against whom it is our first business to prepare ourselves. And the question has still to be asked, and the answer calls for the most serious consideration,—Whether, under all the circumstances of the Indian army, and especially its composition and quality, we have yet arrived at a complete solution of the tactical problem?"

SIMPLICITY of movement is most conducive to order in all movements of men when exposed to fire.

In an attack under fire, or even when the attack is only made with blank, there is invariably a tendency towards confusion. In the present attack formation there is much that produces uncertainty and disorder just at the time when confidence and a thorough knowledge of what is needed to be done is most required.

Towards the end of an attack, control over the fire is often lost, even when the ammunition is only blank, and there is no enemy. The fire is

liable to become rapid and useless. Men fire wildly and without word of command. There is a want of confidence and mutual and moral support. The excitement causes men to fire rapidly. The noise of the firing tends to prevent the men from properly hearing the words of command of the section commanders, and often causes a feeling of uncertainty in many men's minds as to what is really wanted of them. The result is disorder and confusion. For these most obvious faults in the present system of attack, there must be some remedy, and I would suggest, only in very rough detail, a few changes in the present system to prevent the confusion, disorder and loss of control over the fire, which are likely to occur.

The general principle of the present attack formation is, that each company should have part of its strength in the fighting line, which is an extended line, and the remainder in the support, so that the captain may be able to control both lines, and when the support re-inforces the fighting line, that the men may be of one company, and under one commander.

General principle of present attack formation.

I would suggest that the general principle of the present attack formation be maintained, but that the long extended line of men in the fighting line be done away with, and that in the place of men separated from each other by three to four yards, there should be groups or loose sections of 9 to 12 men separated from each other, and each commanded by a section commander.

Substitution of groups or loose sections for extended line.

In a company of 20 files, under the present system, if 10 files were in the fighting line and 10 files in support, the 10 files in the fighting line would become 20 men extended in pairs at 8 or 4 paces intervals, covering a length of ground of 40 to 50 yards, with two section commanders. So there would be 20 separate units, all acting more or less independently; as it is impossible that one section commander could control 10 men under fire, when occupying ground to the length of about 25 yards. Substitute groups or loose sections* of 10 men for the 20 extended men, with intervals of 25 to 30 yards, and there will be a fighting line of the same number of rifles, occupying nearly the same length of ground, but only two separate units, each consisting of a section of 10 men acting together, and commanded by a section commander. Therefore the control of the captain over his fighting line would be easier, and the control of section commanders over 10 men in a group easier than over 10 men in an extended line.

I have taken, as an example, a small company of 40 men, which divided according to custom into four sections, gives each section commander 10 men. It is impossible that one man can control the fire of more than 9 to 12 men in action; and as the strength of companies

* By groups, or loose sections, is understood 9 to 12 men in single rank close together but not close enough to prevent perfect freedom of action.

varies, so certainly should the number of sections, into which the company is divided, vary. If the company is 80 strong, there should be 8 sections; if 60 strong then 6 sections—always keeping the strength of a section from 9 to 12 men. The number of sections into which the company is to be divided should be ordered before the attack commences, and should be such as to cause the sections always being of a strength of from 9 to 12 men. Under the present system, the strength of a section is according to the strength of the company, as the company is always divided into four sections. Thus the strength of a section of a company of 80 men would be 20 men. No section commander could control the fire of 20 men extended in line.

The section commanders should be all non-commissioned officers; if N. C. O.'s to be used as section commanders, these are not procurable then old soldiers could be employed.

Subalterns to be the means of communication between section commanders and captain. The subalterns should not command sections, but should be the means of communication between the section commanders and the captain, whose post is in front of his support.

I have said that the distance between these groups, on loose sections, should be 25 to 30 yards; this in an enclosed country, as a wood, might be reduced, so that the general line is not lost, and in open country might be increased, so that in the event of the section commander finding the fire was too hot, he might be able easily to open out his section without losing control over them, and without allowing his men to get too close to those of another section. He could vary his distance between his men according to the nature of the ground, i.e., drawing them in into a compact, orderly and controllable group when any cover is available, and opening them out when on the open and under heavy fire. He should always bear in mind that the men, and consequently the fire, will be more under control when the men are in a compact body than when extended; so that unless the fire is too hot to be able to advance, the group or loose section formation should be maintained.

I believe that this closing in on one another when under cover, and opening out when on the open, is the natural tendency of men when under fire, and in an excited state. Anything that can make a movement, which is a natural tendency, into a disciplined movement, and an object to be gained, ought to be cultivated. Men, when under fire, are liable to act more from a kind of instinct and natural tendency than by the power of cool and disciplined brains.

I am taking it for granted that the state of the majority of men's brains in action is heated and excited. The reason is that practice against a real enemy could alone ensure a cool head in action, and this of course cannot be given as part of a man's training.

The attack formation should be ordered, so that, as far as possible, it should be suited to this unavoidable excitement, and should, as far as possible, follow the lines of what the natural tendency of men causes them to do.

When the fighting line, thus formed into loose sections, is advancing over an unknown country, each section commander should send out one picked man as a scout, to a distance of about 30 to 40 yards in front, but not out of ear-shot. This scout should have no distance to keep from his next scout, but his whole attention should be directed in carefully looking ahead for the enemy. He should act as a feeler to his section, and being in communication with his section commander, he will take his direction from his section. It is his object to warn his own group of any enemy he may see.

If the advance is in an open country the distance of 40 yards between the scout and his section could be increased; but communication must be easily passed from him to his section, by some sign, if out of ear-shot.

The support which, if it is the other half company, will have the same number of groups or sections as the fighting line, should be within easy reach of it, i.e., about 100 to 150 yards in rear. Its groups or loose sections should be opposite the gaps of the fighting line. The men of the fighting line and the support will of course be in rank entire; and, as in the present system, will lie down when under fire.

I think it would be an advantage if the support always had their bayonets fixed, though carrying their rifle at the trail. They would then be ready, when they had re-inforced the fighting line, to charge; that is to say, assuming that the support is not called into the fighting line until within a short time of the charge. When the support re-inforces the fighting line some time before the final charge and shares in the general advance of the fighting line, I think it would be no disadvantage to have the sections of the support distinguished from those of the fighting line by so simple a method as having bayonets fixed, while those of the original firing line had not.

The original fighting line could, as now, fix bayonets at any time. The support would have, as its weapon, the bayonet in the event of any small party forcing its way through a gap in the fighting line, while the fighting line would be able to fire.

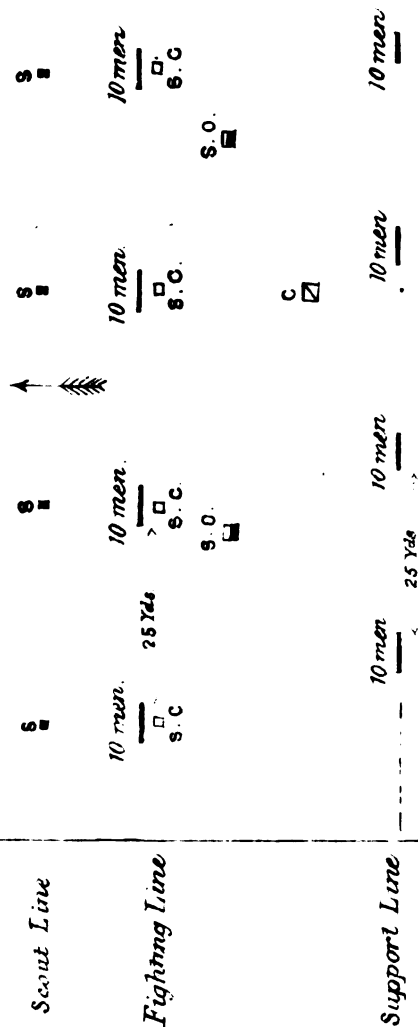
A company of 80 men in attack formation, with half its strength in the fighting line, and the remainder in the support, would be as shown in sketch.

ADVANTAGES OF THE LOOSE SECTIONS OR GROUPS OVER THE LONG EXTENDED LINE.

Greater Control of the Men and consequently of the Fire.

One non-commissioned officer with 10 men, who would not be further from him ordinarily than seven or eight yards, i.e., supposing him to be standing in the centre of the rear of his section, could give his words of command, with reference to firing, with a much greater certainty heard. Orders more easily heard.

*A Company of 80 men extended in Groups or
Loose Sections for Attack.*



S = Scout
 S.C. = Section Com.
 S.O. = Subⁿ Officer
 G = Captain

Reserve in rear

of being heard and obeyed than if his 10 men were extended over a line of 30 to 40 yards; the furthest man being 15 to 20 yards away.

When much firing is going on, it is quite impossible that one man's voice can be intelligibly heard at a distance of 20 yards. In a long extended line, the right and left hand men of a section, if they remain in their proper position, must of necessity be 20 yards, or more, away from their own section commander, and only two or three yards further from another section commander. These men cannot feel that there is any real control over their fire, as they probably will hear both their own section commander and the next section commander, each giving the words of command for firing volleys. This is allowing that the voice of the section commander does occasionally reach even the men at 20 yards distance.

Orders are frequently given by section commanders such as "Right Files Fire," or "Left Files Fire." All the special cautions to be avoided. men in a section probably don't hear the caution, and, when in an excited state, are liable to forget whether they started as a right file or left file.

Would it not be simpler that each man in a section should be within easy ear-shot of his section commander, and that each section should be so separated that it does not hear intelligibly the cautions and orders given by other section commanders?

The sections, consisting of so few men as 9 to 12, could, when volley firing, always fire simultaneously, and so all such confusing orders as "Right Files Fire," or "Front Rank Fire," could be avoided.

By this system would there not be more order, less confusion and less shouting at the men? Orders, too, would be more readily and easily obeyed.

In comparing the two systems, *viz.*, groups or loose sections with intervals *versus* the extended line, I have only allowed, in the extended line, for 10 men to a section; as a matter of fact double that number is often under one section commander, thereby doubling the difficulties of control, which have been already pointed out.

2. *The Fire would be more effective.*

Where volleys are good, their results are good. If each man feels that he has a section commander whom he is certain he hears, he would be more ready to obey. There would be less of that uncertainty of action which is the cause of so much bad firing. With a certainty of action comes confidence, and with confidence must come a cooler head, and with that more effective firing.

3. *Less confusion.*

Confusion is the result of an uncertainty of what is ordered when under fire. Men in extended line are apt to congregate together into masses undivided by sections.

Their section commanders do not know where their sections end or begin. Orders are given and not obeyed. The men are shouted at and become uncertain as to who is ordering them, and what they are ordered to do. The result is confusion. With loose sections or groups the men would not be so likely to mass together into confused masses, undivided by sections, on account of the sections being more clearly defined.

4. *Men in small Groups give moral Support to each other.*

A small party of 10 men with their section commander, acting together as a unit, and independently of other sections, though with the same object in view, must obtain more moral support from each other than where each man has between himself and the next man a distance of three or four yards. There will not then be, among the men, that feeling of acting alone.

5. *Mutual Support.*

Men, within easy ear-shot of each other, and of their section commander, will be able much easier to judge the distance of the enemy by watching where the bullets of their volleys fall; and, in the event of ammunition failing any man, how much easier it would be for him to obtain it from those in his section, who would be close to him, than from them, if these were extended in a long line.

6. *Greater elasticity of Movement.*

100 men, in the fighting line are easier moved when they are in 10 small groups than when they are spread out in one long extended line. The movement of men to the right or left, when in extended order, is only carried out by means of many orders, and much shouting, on an ordinary field day. In action would it be far wrong to say that it would be nearly impossible to alter the direction of the attack when once it had begun?

In the group formation, should a captain receive orders to change the direction of his company, he would order his subalterns, who would not be commanding sections, to convey the necessary orders to the section commanders. If the captain had four sections in his fighting line, and two subalterns, each subaltern would only have to convey the order to two section commanders, and see it carried out by those two sections. The section commanders being a part of their own group, the orders would be rapidly conveyed to each man in the fighting line; and when each man knows what is required of him, he, as a rule, does it.

No doubt there are disadvantages to this loose section or group system of attack; but it being allowed that no system can ensure certain success with no risk, and that the least amount of risk may not be compatible with the greatest amount of success, then the question is, which of these two objects should be considered the most important? Why, the system which will ensure the greatest amount of success. In looking at the disadvantages of the loose section, or group system of attack, we should consider, that though there may be a greater amount of risk, whether there is not a still greater amount of advantage in it, if it ensures a better chance of success.

To be unsuccessful is as having risked everything and having lost everything.

DISADVANTAGES.

Group or Loose Sections are better for the Enemy.

In attacking an enemy or an entrenched camp or post, if the country is absolutely open, affording no cover whatever, the task to men either extended, or in groups, is a difficult one.

The fire from the enemy is deadly, and of the two systems groups might certainly be liable to receive a heavier fire than they could stand. In this case, as I have said before, the section commander can at will open out his section, not to such an extent that his men get beyond control, or that his men are liable to touch the next section. The disadvantage of moving in groups is at once thus simply and easily remedied. I should be inclined to think that loose sections, or groups of men lying down, would not be very much better targets to the enemy than an extended line.

If there is a little cover, it will go further to cover groups of 9 to 12 men, than if they were in an extended line; and so the target offered to the enemy would be less. If the cover is thick, as thick scrub, or wood, the sections can be drawn in closer to each other so as not to lose the general line. The thicker the cover the harder it would be to control the men in extended order, and so the more necessary to have them in groups.

The liability of the Groups of Men becoming too separated and so losing that cohesion which is so necessary in Attack Formation.

The natural tendency of men being to draw in to one another, the tendency of the sections would be rather to close in on one another. This, towards the end of an attack, would be an advantage, as the 30 yards interval, between the firing line groups, could not be entirely filled by the sections or groups from the support.

If the sections of the firing line drew closer in towards the end of an attack, and the sections of the support moved up to re-inforce, the result would be one solid line ready to charge and carry the position.

If the general line of attack was liable to be lost in the group formation, a connecting file could be used between sections.

Finally, numerous small bodies of 10 men would as effectually prevent any concentration of fire from the enemy, as a long line of skirmishers does, the liability of the fire of the enemy being to go above the heads of, or in front of, the fighting line, as the line is a continually moving target to the enemy.

If the advantages of the system of loose sections, or groups, outweigh the disadvantages, and if it be proved that the men in groups are more in hand, and the fire is more effective, than when in extended order, then the group system may become a means by which more order, and less confusion, is obtained than with the present system.

POONA,
April 1886. }

THE GERMAN ARMY.

Translated by MAJOR E. R. ELLES, R.A., Assistant Quarter-Master-General, from "Les Armées étrangères en campagne, leur formation, leur organisation, leur effectifs et leur uniformes, 1885," by A. Dalby, Lieutenant-Colonel.

FORMATION OF THE ARMY.

THE German army on a war footing is divided into two principal parts :—

(1.) The Feld Armée, or Field Army, which is composed of the following elements :—

(a.) Feld-Truppen, or field troops, are the troops of the permanent army brought up to their war footing.

(b.) Feld Reserve-Truppen, or reserve troops, formed at the moment of mobilization from the reservists still available and the best elements of the Landwehr.

(c.) Besondere Feld-Formationen, or special field formations, relating exclusively to the artillery and engineer services.

(2.) The "Besatzungs-Armée," or Garrison Army, intended to remain in the country, and the units of which are entirely created at the moment of mobilization. These troops are classed as follows :—

(a.) Ersatz-Truppen, or depôt troops.

(b.) Besatzungs-Truppen, or garrison troops.

(c.) Landsturm-Truppen or "Landsturm."*

These two armies have each the formations necessary for service on the lines of communication and lines of railway ; and at the time of mobilization they are formed into commands with their staffs and administrative services. After the army has been mobilized, its formation is determined by the order of battle of the field army and by a statement of the garrisons required for places to be occupied by the garrison army, approved by the Emperor and drawn up in time of peace.

The largest tactical unit on the field of battle is the infantry division, in which, in view to the combat, the various arms are permanently combined.

The infantry division is composed of two brigades, the brigade of two regiments, the regiment of three battalions.

To each infantry division are attached : One regiment of cavalry, four batteries of field artillery, one or two companies of Pioneers, a Pontoon train and ammunition and commissariat columns.

In its bivouac it occupies a space of 173 acres.

* Landsturm may be termed " Militia."

Two infantry divisions form an army corps, *i.e.*, the unit of operations. The army corps is completed with corps artillery, engineers, Pontoon train, ammunition columns, commissariat columns, ambulance column, field railway service and telegraph corps, transport columns. To one of the infantry divisions of the army corps is attached a battalion of rifles. An army corps bivouacked occupies a space of 370 acres.

The cavalry which is not attached to the infantry divisions forms independent cavalry divisions, composed of three brigades of two regiments of four squadrons each, that is twenty-four squadrons with three horse artillery batteries.

The army corps and independent cavalry divisions are grouped in armies, the number of which varies according to the political and strategical conditions of the time, *i.e.*, of two or more army corps and cavalry divisions.

All the elements exist during peace time for the formation of nineteen army corps, which it is supposed should be divided into four armies.

REGIMENTAL ORGANIZATION.

INFANTRY.—The German infantry is composed of 161 regiments of three battalions of four companies, each classed as follows :—

9 regiments of the Guard.

19 " " Grenadiers.

13 " " Fusiliers.

120 " " Infantry.

The two first battalions of a regiment are numbered 1st and 2nd battalions ; the 3rd is called the Fusilier Battalion, and is only called the 3rd battalion in Fusilier regiments, Bavarian and Saxon regiments, and the 89th Mecklenburg regiment. In the Prussian Guard (except the Fusilier regiment) and in the Grenadier regiments, the men of the first two battalions are called Grenadiers, and in the line regiments Musketeers. But whatever may be the names given to regiments or battalions, there is no difference made in their employment. The names of Grenadiers and Fusiliers are only kept up by a spirit of tradition. The Guard is not a "corps d'élite" in the ordinary sense of the term. The men are well selected, but they are taken from the mass liable to be recruited and not from the regiments of the line. In the regiments the companies are numbered from one to twelve.

A company of infantry is composed as follows :—

Officers	...	...	5
Under-officers	...	...	20
Drummers and Trumpeters	...	...	4
Lance-Corporals and Privates	...	...	202
Hospital Attendant	...	...	1
Soldiers of Train	...	...	2
Riding Horses	...	...	2
Dray Horses	...	...	2
Two-horse Carts	...	...	1

The total of a regiment of three battalions on a war footing is :—

The total complement of three battalions of the 1st						
Officers	{	Combatant	...	69	}	78
		Medical	...	6		
		Paymasters	...	3		
		Under-officers	...	244		
		Musicians, Drummers, Trumpeters	61			
Troops	{	Armourers	...	3	}	3,111
		Rank and File	...	2,712		
		Hospital Attendants	...	12		
		Soldiers of Train...	...	67		
		Canteen	...	12		
Horses	{	Saddle	...	60	}	134
		Draught	...	74		
Carriages		Regimental Carriages	...	28		

The German infantry also includes 20 battalions of rifles, *viz.* :—

1	Battalion (Jägers) of the Guard.
1	" Rifles (Schützen) of the Guard.
11	" Prussian Rifles (1 to 11).
2	" Saxon " (12 & 13).
1	" Mecklenburg " (14).
4	" Bavarians (1 to 4).

The strength of a battalion of rifles is :—

Officers ...	22
Medical Officers ...	2
Paymaster ...	1
Under-officers and men ...	1,031
Horses ...	40
Carriages ...	12

The infantry is armed with the infantry rifle of Manser's system, the sight of which is graduated to 1,600 metres (nearly a mile), and the range of which is about 3,000 metres at an angle of 35°. This rifle is considered equal to the French Gras rifle, pattern of 1874.

The battalions of Rifles are armed with the rifle carbine, which is the same as the Manser infantry rifle, only a little shorter.

Each soldier carries 80 cartridges; the under-officers 30 only. With the cartridges carried in the vehicles, the supply of ammunition comes up to 111·7 per man and 61·7 per under-officer, without counting the army corps reserves.

In each battalion the men carry 400 small spades, 40 small picks and 20 axes, and on the vehicles are packed 58 large spades, 18 pickaxes, 12 hatchets and 26 axes.

Infantry men carry three days' rations in reserve, which they are not to touch without special orders.

CAVALRY.—The German cavalry comprises 93 regiments, classed as follows :—

Prussian Guard ...	{	1	regiment of Body Guard.
		1	" Cuirassiers.
		2	" Dragoons.
		1	" Hussars.
		3	" Uhlans.

* The whole army is now armed with repeating rifles, including a large number of the Landwehr, 73,000 of the latter having been called out for musketry practice with the new rifle.

German Army	...	...	8 regiments of Cuirassiers.	
			26	Dragoons.
			19	" Hussars.
			22	" Uhlans.
			1	" Saxon Reiters.
			1	" " Carabineers.
			2	" Heavy Bavarian.
			6	" Light "

These regiments are classed in three categories :—

Heavy Cavalry.—10 regiments of Cuirassiers, including one regiment of the Body Guard and one of Cuirassiers of the Guard, and Saxon Reiters and Carabineers.

Cavalry of the Line.—25 regiments of Uhlans and 2 of Heavy Bavarian.

Light Cavalry.—28 regiments of Dragoons, 20 of Hussars and 6 Light Bavarian.

The formation of all the regiments is in five squadrons, four field service and one dépôt.

The regiment is commanded by a colonel, a lieutenant-colonel or major, and has a major as second in command.

The staff of the regiment comprises :—

Officers	3	} 10	} 32
Medical Officers	...	...	...	3
Paymasters	...	...	...	1
Veterinary Surgeons	...	...	...	3
Under-officers and men	16	} 22	
Employed men	...	...	...	6
Horses { Saddle	25		
{ Draught	...	...	...	10
Vehicles	4		

The squadron is commanded by a captain who has under his orders four first and second lieutenants. It is composed as under :—

Officers	5	} 163
Quarter-Master-Sergeant	...	...	...	1
Assistant Quarter-Master-Sergeant	...	...	...	1
Sergeants	...	...	...	4
Under-officers	...	...	...	8
Lance-Corporals	...	...	...	20
Privates	...	...	...	120
Trumpeters	...	...	...	3
Hospital Attendant	1	} 167
Horses { Saddle	...	...	...	167
{ Draught	...	...	...	2
Vehicle	1	

This gives the strength of a four-squadron regiment :—

Officers { Combatant	23	} 30
{ Employed	...	...	...	7
Under-officers	56	} 654
Lance-Corporals	...	...	...	80
Privates	...	...	...	484
Trumpeters	...	...	...	12
Employed men	...	...	...	22
Horses { Saddle	693	
{ Draught	...	...	...	18
Vehicles	8	

The whole of the cavalry is formed in 58 brigades, seven of which are united into three divisions—the Guard Division, Saxon Division and Alsace-Lorraine Division. The other 51 brigades are distributed amongst the army corps and attached to infantry divisions, the numbers of which they bear. The brigades have from two to four regiments, and can be formed into independent cavalry divisions, to which three horse artillery batteries are attached. An independent cavalry division with its artillery has an effective strength of—

Officers	...	...	...	...	166
Medical Officers	...	...	...	...	20
Paymasters	...	...	...	...	7
Veterinary Surgeons	...	...	...	...	20
Combatants	...	...	...	...	4,473
Employed men	...	...	...	...	77
Horses	...	...	...	...	5,107
Guns	...	...	...	...	18
Vehicles	...	...	...	...	101

The Cuirassiers are armed with the straight sword and revolver; 32 men per squadron have the Manser carbine. The Hussars and Dragoons have the curved sabre (steel-handled) and the Manser carbine. Officers and under-officers have the revolver.

The Uhlans are armed with the steel-handled sabre, the Manser carbine, the revolver and a lance 3·15 metres long (10 feet 5 inches), ornamented with a black and white pennant. The carbines are supplied with 50 rounds and the revolvers with 18.

As Pioneer's tools, each regiment has 108 axes carried by the men; 8 large shovels and 6 axes are carried on the vehicles.

Eight privates in each squadron carry a special tool for the destruction of railways and telegraph lines.

All men carry three days' reserve rations.

ARTILLERY.—The artillery is composed of 37 regiments, furnishing 341 batteries, of which 295 are field batteries and 46 horse artillery.

A field battery consists of—

Officers	...	...	...	...	5
Under-officers and men	...	...	...	...	165
Horses {	Saddle	...	...	32	150
	Draught	...	...	118	
Guns	...	...	...	...	6
Vehicles	...	...	...	...	12

The horse artillery battery only differs from the above in the number of horses:—

Saddle	116	230
Draught	114	

Field batteries are attached to infantry, and horse artillery to cavalry.

The regiments also have to furnish reserve ammunition columns to ensure the replacement of ammunition expended in the army corps.

The arms of under-officers, drivers and mounted men are the artillery sword and a revolver with ten rounds. Dismounted men have the straight sword, the guard of which is of brass and the sheath of leather. The

dismounted men of the ammunition columns are armed with the rifleman's carbine, with 30 rounds a man.

The artillery carry three days' reserve rations.

MATERIAL AND AMMUNITION.

A battery of artillery is composed of—

- 6 Guns.
- 8 Waggon.
- 3 Battery Carriages.
- 1 Forge.

All the carriages are painted blue.

The projectiles with which the batteries are supplied are of three kinds : common shell, shrapnel and case. The shrapnel are filled with leaden bullets, the case are filled with zinc bullets.

The limber of each gun has in its ammunition box seven cartridges, six light projectiles or five heavy.

The ammunition waggon has in its limber the same as in that of the gun, and in the waggon body ; each box has nine projectiles and ten cartridges.

The total complement of each battery is—

Field Battery.—440 common shell, 340 shrapnel, 28 case, 848 cartridges. Total 808 rounds.

Horse Artillery.—528 common shell, 360 shrapnel, 28 case, 916 cartridges. Total 916 rounds.

The extreme range is 7,000 metres (7,655 yards) for the heavy gun and 6,800 metres (7,436 yards) for the light gun.

The infantry reserve ammunition columns of an army corps carry 1,474,560 cartridges. An artillery ammunition column carries 10,290 rounds for the heavy guns, that is for the 84 heavy guns of an army corps 122½ rounds per gun ; for the light gun 2,430 rounds, giving for the 18 light guns of an army corps 135 rounds per gun.

The tactical unit is the battery, which is divided into three divisions of two guns each.

PIONEERS.

The German Pioneers are formed into 19 battalions, of which 14 are Prussian, 1 Saxon, 1 Wurtemberg, 1 Baden and 2 Bavarian.

Each battalion bears the number of the army corps to which it belongs. The battalion has four companies, except the Bavarian ones which have five.

Each battalion of Pioneers mobilizes—

- Three companies of Service Pioneers.
- Two divisional bridging trains.
- One army corps bridging train.

The Pioneers, except the under-officers, are armed with the rifleman's carbine, a sword bayonet, the back of which has a saw edge ; each man has 30 cartridges. Each Pioneer company has a certain number of tools carried by the men and others carried on vehicles.

A company of Pioneers consist of—

	Officers	...	...	5
	Under-officers and Privates	...	...	210
Horse	{ Saddle	...	...	7
	{ Draught	...	...	12
	{ Vehicles	...	...	4

A divisional bridging train is sufficient for a bridge $36\frac{1}{2}$ metres (40 yds.) long. With an army corps train, a bridge 122 metres (133 yds.). With the army corps and two divisional trains, a bridge from 195 to 210 metres (213 to 230 yards) long can be constructed.

TRAIN.

The trains of a mobile army corps comprise : The battalion of train, departmental and staff train, and, lastly, the train of the troops.

Germany has 18 battalions and one company of train, or in all 39 companies for the service of the army.

13 battalions are Prussian, 1 Saxon, 1 Wurtemberg, 1 Baden, 2 Bavarian ; the 1 company being Hessian.

The battalions bear the number of the army corps to which they belong.

Under-officers, trumpeters and corporals of train who are mounted, workmen, wheel drivers and spare drivers in the provision columns and convoys are armed with a revolver which has lately replaced the carbine they previously had.

Train drivers, mounted and dismounted orderlies, sergeant-majors and assistant sergeant-majors, drummers, trumpeters, hospital attendants, have no firearms.

Under-officers, trumpeters, corporals, drivers and mounted orderlies have a cavalry sword of obsolete pattern ; all dismounted men have an obsolete infantry sword.

ADMINISTRATIVE SERVICES.

Each mobilized army corps and each independent cavalry division have attached to them the necessary administrative departments under the direction of the intendant of the army corps, who acts on his own responsibility, in accordance with instructions drawn up for the campaign and the orders of the General commanding, under whose orders he is placed. He has to take notice of the dispositions issued by the chief of the staff.

The services of the intendance comprise divisional intendance, treasure chest, commissariat, hospitals (ambulance) and postal service.

SANITARY SERVICE.

The principal medical officer of the army directs the whole of the medical services. He has generally attached to him a consulting surgeon, nominated by the Emperor and selected from amongst those who are the authorities in the profession.

The principal medical officer of the army corps directs the whole sanitary service of the corps.

Each corps d'armée is provided with 12 field hospitals, intended to receive the sick and wounded sent by the sanitary detachments or from corps. The various corps have at their disposal military medical officers, hospital attendants and stretcher-bearers ; they have with them medical

carriages, stretchers, dressing and medical cases of various kinds. With this personnel and matériel are organized field hospitals and field dressing stations on the battle-field.

The sick and wounded of the various columns are despatched to the field hospitals, which are either located singly or several together, and then receive the name of permanent field hospitals.

The various societies for aiding the wounded are, in time of war, attached to the sanitary service of the army and subordinated to the authorities, who employ them according to circumstances.

LINE OF COMMUNICATION, TELEGRAPHIC AND RAILWAY SERVICES.

Each army has a line of communication (Etappen), staff consisting of:—Inspection staff, a section of the medical service, a section of military justice, a section of the veterinary department, a section of telegraphs or lines of communication, a section of post offices, an official of the civil administration and a certain number of commands.

Each of these services is provided with the personnel and matériel necessary for the due performance of its work. The telegraph service comprises: making, repairing and keeping up the telegraphic communications.

The telegraph department on the lines of communication consists of three inspectors and 30 telegraph clerks, 10 overseers, 30 linemen, a column of train consisting of one officer, six under-officers, 49 soldiers, 65 horses, 14 vehicles. This personnel and matériel is divided into two sections—one of construction and the other of reconstruction or repair. The former carries 31½ miles of insulated wire and 1,100 yards of special cable.

The telegraph sections attached to troops in the first line have the same organization. The second section has 46½ miles of conducting wire and 650 insulators.

A system of outpost telegraphs is organized in the troops of the first line; it consists of two Morse's printing apparatus placed in direct communication, one with a battery and the other with a soldier's knapsack containing 500 metres (543 yards) of cable. The battery is enclosed in a box easily transported, and remains at the starting station with one of the Morse apparatus. The second apparatus is carried on in front with the cable. An under-officer and two men are sufficient to work this system. One of the men remains at the initial station with one of the apparatus and the battery, the other with the second apparatus and cable case unwinds the cable as he moves forward, and carries a second drum of cable which can be added on to the first cable when it has run out. The under-officer goes on with the second man and carries the second apparatus, which is connected to the cable case. A telephone was also added to this system of telegraphy, but in the German army they now seem disposed to adopt the system of visual signalling.

The direction of the field railway service is placed under the orders of the inspector-general of lines of communication and railways. He has at his disposal, for carrying out this service, a staff and one or more

military railway detachments and certain special troops. The special troops comprise :—

One Prussian regiment of two battalions of four companies, which mobilizes eight companies of construction, four companies of working staff and two of railway mechanics.

One Bavarian company, which mobilizes one company of construction and one of working staff.

Total 9 Construction Companies.

5 Working Staff „

2 Mechanic „

A construction company comprises :—

Captain Engineer-in-Chief	...	...	1
1st } Lieutenants, line Engineers }	...	...	2
2nd }	...	...	4
Mechanical Engineer	...	...	1
Telegraph	...	...	1
Medical Officer	...	...	1
Paymaster	...	...	1
Under-officers	...	...	25
Buglers	...	...	3
Men	...	...	172
Hospital Attendant	...	...	1
Soldiers of Train	...	...	11
Riding Horses	...	...	11

And a column of train consisting of—

Under-officer	...	...	...	1
Men	...	...	...	9
Horses	...	...	...	18
Vehicles	...	...	...	5

These companies march with the troops of the first line. Supplementary formations are made in accordance with the necessities of each case.

GENERAL EFFECTIVE STRENGTHS OF FIELD TROOPS.

According to the information given by military statistics, the strength of an independent cavalry division is as follows :—

Officers	...	...	...	166
Medical Officers	...	...	...	20
Paymasters	...	...	...	7
Veterinary Surgeons	...	...	...	20
Employed men	...	...	...	77
Men	...	...	...	4,473
Horses	...	...	...	5,107
Guns	...	...	...	18
Vehicles	...	...	...	101

And Germany can mobilize six such independent divisions.

The strength of a mobilized army corps will be—

Officers	...	...	...	828
Medical Officers	...	...	...	165
Paymasters	...	...	...	49
Veterinary Surgeons	...	...	...	34
Employed men	...	...	...	402
Under-officers and men	...	...	...	35,701
Horses	...	...	...	10,617
Guns	...	...	...	96
Vehicles	...	...	...	1,531

And Germany can mobilize 19 such army corps. These are, however, the maximum numbers representing nearly 1,000,000 men for the army of the first line, and which in practice would be reduced to about 800,000 men.

An army corps, composed as we have given above, if it marches on a single road with regulation distances between the various units, would occupy from the point of the advanced guard to the tail of the second column of train a length of 47 miles.

When an army corps starts in a single column on a march of 14 miles, which is about the maximum, the first troops do not reach their destination in less than five hours, the last troops ten hours, the last baggage waggons eleven hours, and the last train vehicles, sixteen hours after the head of the column has started.

In order to form up for assembly or in order of battle on the head or tail of the column, the troops of an infantry division take at least $1\frac{1}{2}$ hours, those of an army corps at least five hours. It only takes half as long to form on the centre of the column.

But in order, as far as possible, to avoid such elongated columns, a corps d'armée is marched on several roads, if they are not more than four to five miles apart, especially if they are not separated by impassable objects.

RESERVE FIELD TROOPS.

The reserve field troops are intended as an immediate support to the field army. These are composed as follows :—

1st.—Of elements belonging to the permanent army and reserve, which have not been employed in the formation of the field army and of dépôt troops.

2nd.—Of elements formed with men of the youngest classes of the Landwehr available. The men of the Landwehr are fully trained soldiers.

In peace time the Landwehr has no permanent cadres. On mobilization, the cadres of the formations employed are composed of a mixture of officers of the permanent army and officers of the Landwehr and reserve ; on the other hand, a certain number of the latter officers are employed in the troops of the line. The consequence is that, on mobilization, a close admixture of these officers takes place, and no matter what their origin, they form but one corps in which they rank according to their seniority, and in which they all enjoy the same rights of promotion. It is the same with the under-officers. With these elements mobile reserve divisions are formed, composed of four regiments of infantry, one of rifles, one regiment of cavalry, three field batteries and one company of Pioneers ; to these are added the usual auxiliary services. The employment of these reserve divisions is not exactly laid down. They appear to form reserve army corps. There appear to be $18\frac{1}{2}$ of these reserve divisions, and in addition 83 battalions which can be grouped or not into regiments and allotted to the garrison army.

The reserve field troops are armed in the same manner as the field army.

GENERAL SERVICES.

The German army possesses, in addition to the auxiliary services attached to army corps, an organization for the service of lines of

communications and railways; a department of military telegraphy; a department of field post offices; an intelligence department. The authority of the chief of the general staff, assisted by the quartermaster-general, constitutes a central authority which concentrates in its hands the direction of all the great services, and confides the particular direction of each branch of these services to chiefs, the limits of whose powers is precisely fixed.

THE GARRISON ARMY.

By an order of the Emperors, the men of the Landsturm, that is all men between 17 and 42 who do not belong either to the army or navy, can be called out to complete the Landwehr formations and to provide special formations, whose rôle it is to occupy the frontiers, country generally and coasts; to serve as depôts and render all the troops of the Landwehr available for service. In extreme cases, the Landsturm can be employed in the field. German authors state that the Empire can count on $2\frac{1}{2}$ millions of men fit for service, both from a physical point of view and from that of military training. With these powerful resources, 300 battalions of infantry and 100 of cavalry could be formed; but these data are very uncertain.

The probable armament of the Landsturm would be the converted needle gun, of Dreyse's system, with bayonet. Officers desirous of mastering the complete organization and functions of the German army in the field might consult, with advantage, a work by Mr. Rivière—"L'Armée Allemande sur le pied de guerre."

Résumé of the strength of the German Army.

		Officers.	Medical Officers.	Employed.	Under-officers and men.	Horses.	Guns.	Vehicles.
Field Army	Field Troops ...	19,383	3,875	12,035	793,887	280,978	2,846	32,016
	Field Reserve Troops	10,979	1,760	4,737	419,390	95,350	1,002	13,695
	Total of Field Army ...	30,362	5,635	16,772	1,212,977	356,328	3,848	45,711
Garrison Army	Depôt and Garrison Troops. ...	8,491	881	1,265,746 2,075	men. 508,245	35,082	444	961
	(Landsturm ...	6,248	583	572	282,722	5,358	132	264
	Total of Garrison Army ...	14,739	1,464	2,647	790,967	40,340	576	1,225
Grand total of German Army		45,001	5,099	19,419	2,003,944	396,668	4,424	46,936
				2,075,563	men.			

THE RUSSIAN ARMY FROM NOTES ON MILITARY ADMINISTRATION.

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Translated by Major E. R. Elles, R.A., A.-Q.-M.-G.

ORGANIZATION.

THE whole of the Russian land forces, according to the nature of their service, are divided into regular and irregular troops, and by arms of the service into infantry, cavalry, artillery and engineer. According to the object for which they are intended the regular troops are divided into four categories, each of which has its own special organization suitable to this object, *viz.* :—

(a.) Field or active troops intended chiefly for warlike operations against an enemy, and despatched in view to the attainment of the main strategic aim of the war. They must always be in constant readiness to receive the first attack of their adversary, on the declaration of war, and it is consequently necessary that they should be capable of being rapidly placed on a war footing and have the greatest possible mobility.

(b.) The reserve troops are intended, firstly, in case of necessity or of the extensive development of the war, to increase the strength of the armies operating in the field; and, secondly, to carry out various secondary and auxiliary operations of war, such as the defence of their out-fortresses, the blockade and occupation of hostile fortresses, securing the rear of the operating army and maintaining their communications, the preservation of order and peace amongst the population of the enemy's territory occupied, and, finally, internal duty in their own country denuded of troops owing to the concentration of the field army in the theatre of war.

(c.) Depot troops are intended to prepare, form and despatch to the theatre of war re-inforcements to replace the waste caused in the ranks of the field and reserve troops during active operations.

(d.) Units and detachments of the auxiliary services which have no fighting importance, either in a primary or secondary degree, but which an army cannot do without either in peace time or during war.

To these belong disciplinary battalions and companies, police details and detachments, the hospital and sanitary detachments, and the detachments of servants and workmen in the various interior economy establishments.

The number of each unit and, consequently, of the whole army is fixed by law, and is called the established strength. In peace time, from economic motives, troops are not kept up to the strength which is necessary for them in time of war, and consequently there is a peace and war

established strength for every unit. With the enormous armies which are mobilised in the event of war in the present day, no power is in a position to maintain the whole army, permanently, on a war strength, and consequently the army in peace only comprises one-third or one-fourth of the armed forces mobilised in time of war.

In Russia, in peace time, the full number of all administrative units and their sub-divisions is maintained, commencing from the company and squadron up to the army corps; similarly the full complement of commanders and their staffs is always kept up, so that in time of war it is only necessary to add to the existing units about one-half the complement of the lower ranks and a small number of the junior officers.

For the reserve troops the cadres are maintained at a much lower strength and do not go above the battalion. In time of war these battalions are expanded into regiments, and from the latter are formed brigades and divisions. The numerical strength of the cadres is fixed at a much lower rate and is, in fact, only about one-tenth of the number to which the reserve troops are expanded in time of war.

Finally, the *dépôt* troops are not maintained at all in peace time and are only formed on the outbreak of war. The strength of the cadres, too, is not the same for all branches of the service, but depends on the degree of difficulty in training men for service. The lowest cadres are in the infantry, then in the engineers, then the artillery, and, finally, the cavalry have always in peace the same establishments which are necessary in time of war.

Placing the army on a war footing consists in increasing its units to the established war strength in men and horses and in completing its matériel, *i.e.*, uniform, equipment and armament to the war complement. The personnel is brought up to the war establishment by calling out the officers and lower ranks who have served the prescribed time in the army and have been passed into the reserve with the liability of having to present themselves at the first call of the Government.

These persons, in accordance with lists prepared beforehand in peace time, are either detailed to complete the units, whose cadres are kept up in peace time, or to form new units which have not got permanent cadres. The completion of the army to the war establishment of horses is carried out by means of the special law by which there is an obligation on the people at large to furnish the requisite number of horses in time of war on payment for them of a fixed price from the Treasury. The required matériel is supplied from the so-called "inviolable reserves," which consist of complete supplies of all matériel for the difference between the peace and war establishments of the army. For those units, which have cadres, these reserve supplies are in charge of the units themselves, and they are responsible for them, and for units which have no peace cadres the stores are kept at the points of formation of these units. Having glanced at the basis on which the Russian army is organized, we will pass on to the composition and numbers of the troops, dividing them into the four categories given above and taking them by arms of the service.

FIELD TROOPS.

I.—INFANTRY.

The field service infantry consists of infantry divisions, rifle and line brigades and detached line battalions.

(a.) In the Russian army there are in all 48 infantry divisions, *viz.*, 3 of the Guard, 4 Grenadier and 41 army divisions. The Guard divisions are numbered 1st, 2nd, 3rd, the Grenadier divisions 1st, 2nd, 3rd, and the Caucasus Grenadier division; the army divisions are simply called infantry divisions, and are numbered from 1 to 41. Each division is divided into two brigades, and consists of four regiments (two to a brigade). The brigades of each division are numbered as the 1st and 2nd brigade of such and such a division. The Guard regiments have each their own special name; the Grenadier and army regiments, in addition to their own name, have a special number;* the numbering runs through the Grenadier regiments from 1 to 16, and through the army regiments from 1 to 164. Each regiment consists of four battalions numbered from 1 to 4. Each battalion has four companies which are numbered, but the numbering runs through the regiment, according to the seniority of the battalions, from 1 to 16.

(b.) Of rifle brigades there are 11, *viz.*, one of the Guard, 5 rifle brigades numbered from 1 to 5, 1 Caucasian, 1 Trans-Caucasian, 1 Turkestan and 2 East Siberian. Each brigade consists of 4 rifle battalions† which bear a number; the numbering of the 5 brigades located in European Russia is, however, from 1 to 20, whilst in the Caucasus, Trans-Caucasus, Turkestan and East Siberia they are numbered *seriatim* in the province as 1st Caucasian rifle battalion, 3rd Turkestan rifle battalion, 8th East Siberian rifle battalion. In addition to these there are 8 separate Finland rifle battalions under the special commandant of the Finland‡ troops. Each of the 54 rifle battalions has 4 companies.

(c.) Line battalions are maintained in three distant military circles in Asia. They are called the Turkestan, West Siberian and East Siberian battalions; they are in addition numbered in their own provinces. The number of these battalions is 32 in all, *viz.*, 20 Turkestan, 8 West Siberian and 4 East Siberian, in each of which there are 4 companies. The greater part of the Turkestan (17) battalions and West Siberian (5) battalions are formed into brigades (4 Turkestan and 1 West Siberian line brigades).

The number of the infantry units is fixed at two different strengths—the peace and war establishments; the distinction is in the difference of files in the company. On a war strength, in infantry regiments, there are 100 files per company; on a peace strength 48 files. Besides these there are, in each company, on a peace strength 4 and on a war

* In the 3rd Grenadier infantry division are two Grenadier regiments which have no numbers.

† Except the Trans-Caucasian brigade, which has 6 battalions.

‡ The Finland troops are separate from the Russian army, have special regulations regarding conscription and have a special commandant.

strength 15 unarmed men employed in interior economy duties and as officers' servants.

			Peace strength.	War strength.
Battalion	...	...	400	860
Company	...	...	100	215

Rifle and line battalions also have two establishments, similar to the above.

If to the number of rank and file you add the under-officers, volunteers, drummers and buglers, and also the non-combatants, such as cooks, mechanics, train men, the full strength of an infantry regiment is :—

On a peace strength	...	...	...	1,899
" war "	...	...	...	3,977
In a rifle battalion the strength is—				
Peace strength	...	...	...	478
War "	...	...	...	1,002

The following is the provision for supply of ammunition in the field :—

Carried by the soldier	84 rounds.
" in the battalion ammunition carts in 4 four-horse waggons	60 "
" in divisional ammunition column in four-horse waggons	52 "
" in army corps ammunition column in four-horse waggons	13 "
Total	202 rounds.

II.—CAVALRY.

The field service cavalry consists of 17 cavalry divisions, *viz.*, 1st and 2nd Guard, 14 Army and the Caucasus division. There are also always mobilized three Cossack divisions, one of Don Cossacks and 2 of Caucasus. Thus there are in all 20 cavalry divisions.

In addition to these there are 18 separate Cossack regiments always in the service (chiefly for duty in the Caucasus and in distant provinces); of these 3 Kuban Cossack regiments form the Kuban Cossack brigade; 3 Terck Cossack regiments, the Terck Cossack brigade; and the Cossacks of the Trans-Caucasus, the Trans-Caucasus Cossack brigade.

The 1st cavalry division of the Guard consists of 4 Cuirassier regiments and two Don Cossack regiments of the Guard. The 2nd cavalry division of the Guard consists of 6 regiments, *viz.*, one mounted Grenadier, one Dragoon, 2 Uhlan, 2 Hussars and the Ural Cossack Life Guard squadron. Each of the 14 army cavalry divisions consists of 4 regiments, 3 Dragoon and 1 Cossack; the Caucasus cavalry division consists of 4 Dragoon regiments; the Don Cossack division of 4 Don Cossack regiments; the 1st Caucasus cavalry division of 3 Kuban and 1 Terck Cossack regiments; and the 2nd Caucasus Cavalry division of 4 Kuban Cossack regiments.

The division is divided into 2 brigades, each of which consists of 2 regiments; in the 14 army divisions the 1st brigade has 2 Dragoon and the 2nd brigade 1 Dragoon and 1 Cossack regiment. The Guard regiments have each special names, and the army regiments, besides

a name, have a number ; in the Dragoon regiments these numbers run from 1 to 46. Each regiment consists of 6 squadrons* and each squadron is divided into 4 sections.

Cavalry regiments have only one established strength, at which they are always maintained, *viz.*, 16 files per section, and the whole regiment on a war strength comes to 948 of the lower ranks and 940 horses. In addition to these, in peace time, each regiment maintains 123 dismounted men who are intended to perform non-combatant duties, such as servants to officers, clerks, &c.

III.—ARTILLERY.

The field artillery is divided into *foot* (field batteries) and horse artillery.

The foot artillery consists of 48 brigades, corresponding to the number of infantry divisions, *viz.*, 3 Guard, 4 Grenadier and 41 army. Each brigade has a number similar to the number of the infantry division to which it is attached. A brigade consists of 6 batteries, which are numbered from 1 to 6 in each brigade.

The first 2 batteries of each brigade are armed with battery (heavy guns), the remaining 4 batteries with light guns.† The battery consists of 8 guns and is divided into 4 divisions. Both the heavy and light guns are rifled steel breech-loaders, capable of long range fire.

The foot artillery (field batteries) have two established strengths, *viz.* :—

War strength.—Men for all 4 divisions, horses for the 8 guns and the full number of ammunition waggons (in heavy batteries 16, in light 12 waggons).‡

Peace strength.—Men for 4 divisions at diminished strength, and horses for 4 guns.

The horse artillery, for use with cavalry, consists of 28 batteries, *viz.*, 5 of the Guard and 23 of the Line. Besides these there are always mobilized 20 Cossack batteries, one of which is the Guard battery of Don Cossacks. The 6 Guard batteries form the Guard horse artillery brigade belonging to the Guard army corps. The remaining horse artillery batteries are distributed to the corps to the number of 2 to each cavalry division.

The horse artillery is armed with the horse artillery gun, a rifled steel breech-loader. Each battery has 6 guns and two established strengths.

War strength.—Men for 3 divisions, horses for all guns and waggons (6 per battery).

Peace strength.—Men for 3 divisions, horses for all the guns and for 2 waggons.

* Except Cuirassier regiments which have only 4.

† In the 18th, 19th, 20th, 21st, 38th and 39th brigades the 5th and 6th batteries are armed with mountain guns. There are also 3 mountain batteries in the Kiev garrison artillery.

‡ Each heavy or light gun is drawn by 6 horses, also each ammunition wagon.

There are also the following details for local service in distant provinces :—

1. Turkestan field artillery brigade of 7 batteries.
2. West Siberian field „ „ „ 4 „
3. East Siberian „ „ „ „ 4 „
4. Two horse mountain batteries—one in the Turkestan and one in the Omsk districts.

The artillery parks or reserve ammunition columns are also in charge of the artillery. Each infantry division, with its artillery, has a flying park brigade of 4 flying parks—two of artillery and two of infantry ammunition. Each cavalry division has a separate cavalry flying park. The flying parks, for the replenishment of ammunition used in action, follow the troops everywhere, even on to the battle-field. They are refilled from the *mobile parks*, a number of which, equal to the number of infantry divisions, are attached to the army. The *mobile parks* are in their turn re-stocked from the stationary artillery stores.

There are also under the artillery 3 siege parks, the 1st, 2nd and Caucasus ; they consist of guns of large calibre and all material necessary for besieging an enemy's fortresses.

The number of rounds carried for artillery is —

	With Battery.	1st Ammunition Column.	2nd Ammunition Column.	Total.
Heavy	126	108	36	270
Light	165	135	43	343

Of the rounds with the battery the nature is :—

	Common shells	Shrapnel	Case	Heavy.	Light.
	57	78
	63	82
	6	5
				126	165

IV.—ENGINEERS.

The field service engineers consist of 17 Sapper battalions,* 8 pontoon battalions, 6 railway battalions,† 16 military telegraph parks and 6 field engineer parks.

All these troops and technical units are formed into 6 Sapper brigades, which are numbered 1, 2, 3, 4, 5, and the Caucasus brigade. The brigades are not all of the same composition.

The 2nd, 3rd and 4th brigades consist of 3 Sapper, 2 pontoon, 1 railway battalion, 3 telegraph parks and 1 field engineer park. The 1st brigade has 1 pontoon battalion less. In the 5th brigade there is no railway battalion. The Caucasus brigade has 2 Sapper battalions, 1 telegraph and 1 field engineer park.

A Sapper battalion on a peace strength has 5 companies, and on a war strength 4 ; the 5th company on mobilization is detached to form reserve Sapper units. There is a double establishment.

* In addition there are the Turkestan Sapper half battalion and the West and East Siberian Sapper companies.

† Includes 2 Trans-Caspian not included in the brigades.

Peace strength.—50 files per company and 8 unarmed men.

War strength.—100 files and 15 unarmed men.

A pontoon battalion has two companies and two establishments—

Peace.—50 files per company and 8 unarmed men.

War.—76 files and 14 unarmed men.

And on mobilization 144 drivers are attached from the cavalry reserve.

A railway battalion has 4 companies, two of which are *construction* and 2 *reconnoitring* or prospecting companies. The telegraph parks have an establishment of *personnel* and *matériel*, necessary for the construction of a line of 65 versts (43½ miles), and can be split up into two separate divisions.

The field engineer park is formed in two divisions, and has a reserve of entrenching tools for 10 infantry divisions and 10 Sapper companies.

There are in addition to the above units—

(a.) Two siege engineer parks, consisting of 4 divisions each ; each division has sufficient tools, &c., for the siege of a fortress.

(b.) Four mining companies for sub-marine mining in the ports of the Baltic and Black Seas.

FORMATION OF CORPS.

The Russian field army is formed into 19 corps, *viz.*, the Guard corps, the Grenadier corps, 15 army corps and 2 Caucasus corps. The army corps are numbered from 1 to 15 ; the Caucasus corps 1 and 2.

Each corps consists of 2 or 3 infantry divisions, one cavalry division and the proper number of artillery units. The Rifle and Sapper brigades do not form part of the army corps.

RESERVE TROOPS.

The reserve troops are intended for the following purposes :—
As a support to the field troops, for the maintenance of garrisons in fortresses and other fortified points, and for carrying on the duties of internal service. They consist of infantry, field artillery and Sappers.

The *Reserve Infantry* consists of the Guard and 96 army reserve (cadre) battalions, numbered from 1 to 96.

In peace time each battalion consists of 5 companies of 40 files per company, with 8 unarmed men. The companies are distributed throughout district towns for internal duties, and the battalion staff are chiefly located in the chief towns of Governments, and fortresses, as far as possible, centrally situated with regard to the companies. With the battalion staff one company, at least, is left, and the reserve stores for the whole battalion. On mobilization the companies are concentrated at their battalion head-quarters and there brought up to a war footing. By drawing officers and men from the general reserves, the cadre battalions are so expanded that each section of a company becomes a whole company of 100 files with 15 non-combatants, and each company thus forms a whole battalion on a war footing ; consequently each cadre battalion forms 5 battalions, each numbering 860 rank and file. Of these mobilized

5 battalions 4 form an infantry regiment, which can at once move to the theatre of operations or wherever circumstances may require ; the 5th battalion remains for local service until it can be relieved by the *drujina* or battalions of militia, when it also becomes available for service.

The reserve regiments, according to lists prepared in peace time, are formed into infantry divisions, each of which is divided into 2 brigades of 2 regiments each.

These newly-formed divisions are numbered after the field army divisions, commencing from 42, and the regiments composing them are numbered after the field infantry regiments, commencing with 165.

By this system of reserves the 48 divisions of the field army can be reinforced, in the theatre of war, by fresh divisions. The organization of both field and reserve divisions is the same. Each consists of 4 regiments in 2 brigades, each regiment of 4 battalions, and each battalion of 4 companies. Their mobility is the same as they are furnished with the same kind of train and to the same extent. Nevertheless, in their degree of fitness and capability for the most important operations of war, they must always give place to the field army owing to the cadres maintained for them in peace time being so much weaker. In addition to the above there are 6 reserve infantry (*cadre*) battalions in the Caucasus, which are in an exactly similar manner expanded into 6 regiments.

The *Reserve Artillery* consists, in peace time, of 6 reserve foot artillery brigades (field batteries), each having 6 batteries or 36 batteries in all.

In war time the reserve artillery units are so expanded that each division of 2 guns is expanded into a whole battery, each battery thus forming 4, and each reserve brigade 24. Of these 24 batteries 16 are attached to the reserve infantry divisions and 8 are termed *depôt batteries*, and remain local for replenishing the waste in the artillery of the field army.

In this manner 96 reserve and 48 *depôt* batteries are formed. The reserve batteries are formed into 24 brigades of 4 each, and attached to the 24 reserve infantry divisions ; they are numbered after the field artillery brigades, commencing with 42. Each brigade has 2 batteries of heavy field and 2 of light field guns with 8 guns to a battery.

The *Reserve Engineers* consist of 34 reserve Sapper companies which are formed, in time of war, from the 5th companies of each of the 17 Sapper battalions of the field army ; thus each 5th company is expanded into two reserve companies. Of these 34 companies 16 are used on the lines of communications, in rear of the army, and 18 are for use in fortresses.

In addition to the above troops there are—

1. Local troops :—

(a.) Local battalions in certain distant Government towns of European Russia, the Caucasus and Siberia ; there are 13 in all.

(b.) Local detachments.

(c.) Convoy detachments for prisoners.

2. Garrison artillery consisting of 52 garrison artillery battalions.

DEPOT TROOPS.

The object of the *dépôt* troops is to train and despatch, to the theatre of war, detachments to replenish the waste in the field and reserve troops. Each arm of the service has its *dépôts*.

- (a.) Infantry *dépôt* troops consist of the infantry *dépôt* battalions of the Guard and Line, and the Rifle *dépôt* battalions of the Guard and Line.

The number of these battalions is equal to that of the infantry regiments and rifle brigades of the field army, *viz.* 199 battalions.

Dépôt battalions do not exist in peace time but are formed when the army is placed on a war footing. Each battalion has two kinds of establishment—*permanent* and *temporary*. For the permanent establishment every regiment and rifle brigade of the field army detaches, as a cadre, 1 staff officer, 6 officers and not less than 40 rank and file*; these form the training establishment. The temporary establishment consists of officers and men from the general reserve or from the militia of the first category or from conscripts. The reserves of matériel for these *dépôt* battalions are maintained with the regiments to which they belong and are termed “inviolable stores.”

- (b.) The cavalry *dépôts* consist of 18 cavalry *dépôt* cadres.† Each cadre has divisions corresponding to each cavalry regiment; there are thus three divisions,‡ except in the 1st Guard cavalry *dépôt* and the Caucasus cavalry *dépôt* which have four.

On mobilization each division is at once formed into 2 squadrons of 20 files to a section (80 per squadron), and men are trained for a 3rd squadron. Officers and men are obtained from the general reserve; horses under the law for horse-conscription. The field army is replenished either by whole squadrons or by detachments.

These cavalry *dépôts* are brigaded in 8 brigades, *viz.*, 1 of the Guard and 7 of the Line.

- (c.) *Artillery dépôts*.—Under reserve troops, it has been stated that 48 batteries are detailed as *dépôt* batteries corresponding to the number of artillery brigades of the field army. In order to provide *dépôts* for horse artillery the 6th battery of each reserve artillery brigade has, in peace time, one division of horse artillery which, in war time, is expanded into a battery of 3 divisions of field and 1 of horse artillery.

- (d.) *Engineer dépôts*.—On mobilization 4 Sapper battalions of 4 companies each are formed by detailing cadres of officers and rank and file from the 1st, 2nd, 3rd and 5th Sapper brigades; rolls of these cadres are kept in peace time.

* These are all detailed in peace time.

† One to each cavalry division, except the 2nd cavalry division of the Guard, which, having 6 regiments, has 2 cadres.

‡ The 4th regiment of the division is a Cossack one.

IRREGULAR TROOPS.

In these are included—

1. Cossack troops.
2. Native „

I.—COSSACK TROOPS.

On the southern and south-eastern borders of Russia, partly owing to historic causes, and partly as the result of the administrative measures of Government, a numerous and warlike population has been formed, known as Cossacks, and inhabiting provinces usually known as Cossack "Voiskos," of which there are the following (in order of their numerical strength) :—

Don, Kuban, Orenburg, Trans-Baikal, Terck, Ural, Siberian, Astrakhan, Amur and Semiraichia. The commander of all these Voiskos is His Majesty the Czar, who is known as the "Ataman" of all the Cossack troops. Each Voisko is under its own "Ataman" who holds civil as well as military powers of Government.

The population of the various Cossack territories furnish, on a war footing, 135 cavalry regiments, 33 detached "sotnias" (or squadrons), 12 infantry battalions and 38 horse artillery batteries with an established strength of 160,000 rank and file. On a peace strength only a portion (about $\frac{1}{3}$) of these regiments, battalions and batteries are mobilized, the remainder being exempted for peaceful occupations.

The most numerous of the Cossack "Voiskos," that of the Don, furnishes, in time of war, 48 cavalry regiments and 22 batteries, of which, on a peace footing, there are 17 regiments and 8 batteries mobilized.

II.—NATIVE TROOPS.

The native troops consists of some bodies for local service raised from the races of the Caucasus and the Turkomans and variously organized.

THE IMPERIAL MILITIA.

Under exceptional circumstances recourse may be had to calling out the Imperial militia. This militia consist of foot "drujinas" containing four companies, numbering from 660 to 1,000 men, and mounted "sotnias" of 120 men. All males between 21 and 40 years of age, not enrolled in the army or its general reserve, belong to the militia. It is evident that the numbers enrolled in the militia will always greatly exceed requirements, consequently the Imperial edict, calling out the militia, sets forth the number of "drujinas" and "sotnias" to be furnished by each Government.

According to a French source of information* the composition of an army corps is as follows :—

	Combatants.	Non-Combatants.	Total.	Horses.	Guns.
Army Corps ...	16	35	51		
2 Divisions Infantry ...	10	24	34		
4 Brigades ...	4	...	4		
2 " Artillery ...	6	44	50		
1 Division Cavalry ...	4	11	15		
2 Brigades " ...	2	...	2		
2 Divisions Infantry ...	31,568	936	32,504	1,488	
2 Brigades Field Artillery ...	2,904	288	3,192	3,192	96
1 Division Cavalry ...	2,976	364	3,340	2,824	
2 Batteries Horse Artillery ...	370	52	422	460	12
1 Battalion Rifles ...	981	44	1,025	61	
Engineers ...	1,871	337	2,208	1,233	
2 Divisions Artillery Train, (Ammunition) ...	1,424	196	1,660	1,828	
1 Section Park for Cavalry Division ...	142	19	161	177	
1 Section Park for Rifles ...	25	5	30	32	
2 Divisional Ambulance ...	...	446	446	460	
	42,303	2,791	45,094	10,755	108

The general effective strength of the Russian army is given as—

General Departments	Officers ...	12,678	103,534
			Officials ...	840	
			Men ...	90,016	
			Horses ...	11,391	
Active Army	...	Combatants	Vehicles ...	2,389	1,137,479
			Officers ...	22,431	
		Non-Combatants	Men ...	1,035,442	
			Officials ...	2,356	
			Men ...	79,250	
			Guns ...	2,624	
			Horses ...	263,803	
			Vehicles ...	35,266	
		Combatants	Officers ...	20,979	
			Men ...	954,053	
Reserve Army	...	Non-Combatants	Officials ...	1,831	1,064,018
			Men ...	87,155	
			Guns ...	1,170	
			Horses ...	55,049	
			Vehicles ...	7,086	

* Les Armées étrangères by A. Dalby, Paris, 1886.

Frontier Battalions	{	Combatants	...	{	Officers ...	891	}	41,486
				Men ...	36,648			
		Non-Combatants	...	{	Officials ...	147		
				Men ...	3,800			
				Horses ...	2,618			
Cossacks	{	Combatants	...	{	Officers ...	3,578	}	142,821
				Men ...	139,243			
		...	{	Guns ...	192			
				Horses ...	131,725			
Total						...	2,489,338	

This formidable army, regularly organized, provided with all accessories and 3,986 guns, would still leave behind it a territorial reserve of nearly 2,000,000, who would find in their depôts the necessary equipment and armament, if the defence of Russian territory called for a powerful effort. After this second line, and as a last resource, the national militia would give another 1,200,000 men.*

THE RECRUITING OF THE ARMY.

Every male between 21 and 40 years of age in the Russian empire is liable to serve in the army or navy; obligatory service is personal, and exemption by money payment or exchanges is not allowed. There are, however, the usual exceptions and exemptions to service, such as those medically unfit, those who are the only support of their families, &c. The term of service, with the colours, is further shortened for persons passing certain educational courses and for volunteers. The general term of service in the permanent army is 15 years, but only 6 years are passed actually in the service with the colors; for the remaining 9 years the men are enrolled in the general reserve and live at their homes. Men are, however, often sent to the reserve under 6 years,† and may further be granted furlough amounting to one year. The men of the reserve can be called out for training, but not oftener than twice during their service; in time of war they are liable to be called out. For the remaining 4 years, during which they are liable to serve their country (up to 40 years of age), men belong to the militia. The conscription takes place annually from 1st November to 15th December, and all men reaching the age of 21, in the current year, are called up according to previously prepared lists.

Putting the peace establishments of the army at 760,000 men and limiting the period of service, with the colors, to 5 years, about 190,000 conscripts are required annually. The number of young men, in Russia, attaining the age of 21 annually is about 800,000, so only about one-fourth of these are required for the service. About one-third of the total number

* *Notes.*—This army is regularly organised and equipped *on paper*, but as militating against its efficiency there are two powerful factors :—

(1.) The corruption known to exist in all departments in Russia.

(2.) The bankrupt condition of the finances.

It is believed that Russia was nearly at the end of her resources during the Turkish war of 1877-78.

† In 1885 after 5 years.

are, however, unfit from various causes, consequently there remain 535,000 from whom to select the annual contingent. After taking into account the exemptions and limitation of service, from causes other than unfitness, the number of conscripts required is selected by lot.

OBLIGATORY MILITARY SERVICE OF THE COSSACKS.

The rules regarding service vary slightly in the various Cossack "Voiskos," but those in force with the Don Cossacks, the most numerous "Voisko," may be given as the general type.

The armed forces of the Don "Voisko" is divided into service establishments and militia. The service establishment is divided into 3 classes :—

(a.) *Preparatory* class in which Cossacks receive preparatory training or service.

(b.) *Fighting* class from which the mobilized regiments and batteries are recruited.

(c.) *Reserve* class intended to replenish the waste in the fighting ranks, in war time, and also to form special units and detachments.

Every Cossack commences service at 18 and serves for 20 years, *viz.*, 3 years in the preparatory class, 12 years in the fighting class, and 5 in the reserve.

The fighting class is again divided into three categories, of which the first only actually serves in peace time. Thus each Cossack is liable to service as under :—

	No. of years.	From
In Preparatory Class	... 3	... 18 to 21
,, Fighting Class {	1st Category ... 4	... 21 „ 25
	2nd Category ... 4	... 25 „ 29
	3rd Category ... 4	... 29 „ 33
,, Reserve Class	... 5	... 33 „ 38

Men in the 1st category of the fighting class have to maintain their uniform and equipment of the established patterns and their own horse. Those of the 2nd and 3rd categories are only liable to serve in war or when required and live at their homes. Men of the former have to maintain their uniform, equipment, arms and horses ; they are called out for training annually for three weeks in May, and can consequently be mobilized at any moment. Men of the 3rd category have to maintain their uniform, arms and equipment, but need not keep up horses ; they are called out for training only once in the four years (in the third year) for three weeks. The Cossacks of the reserve are bound to keep up the necessary arms and equipment in the event of being called out, but do no duty and have no training in peace time ; in time of war they are called out, as far as may be necessary, commencing with the youngest in age.

SUPPLY OF THE ARMY WITH OFFICERS AND UNDER-OFFICERS.

This question plays an important rôle in the organization of an army, as its moral and fighting qualities greatly depend on the quality of these classes.

In Russia there are three classes of training institutions :—

(a.) *Cadet Colleges* : for general elementary education and military subjects of the classes from which officers are drawn. There are 11 for infantry, 2 for cavalry and 3 for Cossacks.

(b.) *Military Colleges*, which are of a much more advanced kind and are generally recruited from those who have passed the courses of the cadet corps. There are 3 for infantry, 2 for cavalry, one for artillery and one for Engineers.

In addition to the above two cadet establishments, there are 20 cadet corps, which are preparatory schools, maintained by Government, for supplying (a) and (b) 3 in these the full course is 7 years ; also 7 military schools in which the preparatory course is 4 years.

(c.) *Military Academies* of which there are 4, viz. :—

Academy for General Staff.

Artillery Academy.

Engineer

Academy of military justice.

Officers have to serve various periods before they can enter these establishments, and the courses are of $2\frac{1}{2}$ years.

In addition to the above there are—

Officers' Musketry School.

„ Cavalry School.

„ Artillery Practice School.

„ Galvanic Class.

UNDER-OFFICERS.

In order to provide under-officers, by promotion from privates, there are two kinds of schools—

(a.) Company School.

(b.) Regimental „

All conscripts, on entering the service, are taught reading and writing in their company or squadron schools, and the course of instruction commences after the summer training and continues to the next summer's training. This instruction is carried out by the under-officers and better educated privates.

To prepare privates for duties requiring more education and also for the regimental school, a company school is established which is attended by at least 12 men per company, of whom two-thirds are young soldiers of the last draft who have had one summer training. The school is in charge of one of the junior officers assisted by the best educated under-officer. The course, reading, writing and arithmetic, is carried out between the summer trainings.

To prepare privates for under-officers, regimental schools are established. The number trained annually is equal to half the established strength of under-officers of the regiment. The men are selected by company commanders from amongst those of good character, capacity and possessing qualities suited to the position of under-officer from amongst those who have passed the course in the company schools ; they are, as far as possible, young soldiers, so that on promotion they may be retain-

ed as long as possible before passing to the reserve. The course is carried out between the summer trainings. A special officer (a company commander) is placed in charge, assisted by officers in an infantry and one in a cavalry regiment. A staff officer, one of the battalion commanders, has the general superintendence. They are examined in the spring by a board composed of battalion and company commanders under the presidency of the commander of the regiment.

On a vacancy occurring in a company the company commander selects a man who has passed the course in the regimental school and has served not less than two years. The appointment is confirmed by the regimental commander. The following cannot be promoted :—

- (a.) Privates in the punishment class.
- (b.) Privates reduced by court-martial from under-officers.
- (c.) Privates reduced to the ranks from officers.

Privates can also be promoted for distinguished conduct in the field and also in peace time for an exploit, or for specially meritorious service.

Men whose period of service is limited on educational grounds can be promoted under-officers after reduced periods in the ranks, varying from three months to a year for conscripts of the various classes of limited service, and from two months to a year for volunteers ; they need not go through the regimental school but have to pass an examination.

OFFICERS.

The rank of officer may be attained in different ways :—

- (a.) Under-officers, who enter as conscripts, may be promoted to officers, but only after having served the full period according to the scale fixed by law for military service, and they must have served a certain time as under-officers ; 6-year men have to serve two years in that rank and 4-year men one year ; for under 4-year men there is no fixed period. They have to enter the cadet college when their period of service in the ranks has expired.

- (b.) Volunteers before promotion must serve—

1st class	...	3 months ;
2nd „	...	6 „
3rd „	...	3 years ;

but they must have received one summer training. They enter the cadet or military colleges.

- (c.) Pages of H. M. the Czar's Corps of Pages (4 classes) under various rules regarding the class of examination they pass.
- (d.) Cadets of the cavalry and infantry military colleges enter as officers in three classes according to the examination they pass.

1st class as sub-lieutenants in the infantry of the line with one year's seniority, and from the cavalry colleges as cornets in the Guard or Line cavalry with one year's seniority.

2nd class as sub-lieutenants, or cornets in the Line.

3rd class as volunteers in the ranks as under-officers, and they are promoted officers in six months.

From the Michaelovski artillery college with two years' seniority in the artillery.

From the Nikolaevski Engineer College with two years' seniority in the Engineers.

PAY.

Officers are paid at two different rates known as "ordinary" and "increased" pay; the former is given in Russia proper, the latter, which is about half as much again, is allowed in the Caucasus and east of the Black Sea. In the Amur and Primorski districts and in Turkestan ordinary pay ranges from 687 roubles a year, for a colonel, to 294 roubles for a sub-lieutenant; increased pay from 1,032 to 441 roubles.* Two and a half per cent. is deducted from their pay for medical attendance and 6 per cent. for Pension Funds (Emerital cash). In addition to *pay table money* is given to officers *filling certain offices such as* colonel commanding a regiment, lieutenant-colonel commanding a detached battalion or regimental battalion, junior staff officers, company and squadron commanders, adjutants, paymasters, &c.

The amount varies from five roubles a day to three-fourths of a rouble.

All other officers, not entitled to table money, receive a special allowance of half a rouble a day.

Additional (command) allowance is also given to colonels of regiments, amounting to 1,200 roubles annually, and to commanders of detached battalions, varying from 300 to 900 roubles.

The pay of under-officers and privates is also "ordinary" and "increased," the latter being about double the former; it is given in the same manner as to officers, and also in war time anywhere without the limits of the empire.

There are some further allowances for officers, in the form of marching batta, field allowances, and there is working pay for the lower ranks.

RATIONS.

The Russian soldier receives rations and cooking money, the former consists of (about) 2½ lbs. (Russian)† flour or 3 lbs. baked bread, or 2 lbs. biscuit, ½ lb. groats.

Cooking money is issued to permit of the men buying ½ lb. meat, salt, vegetables and other stores; it is fixed annually for each Government depending on the local price of meat.

SUPPLY OF FORAGE.

The scale of forage for the various classes of horses is as under :—

	Oats.	Hay.	Straw.
	Russian lbs.	Rus. lbs.	Rus. lbs.
Guard cavalry ...	13½	10	4
Line " ...	10½	10	4
Draught horses ...	8½	20	...

In the Guard horses receive dry forage all the year round, in the Line, during 11 months, and officers receive forage for one horse.

* A rouble is 3s. 2d. nominal value.

† A Russian pound = 908 lbs. Avoirdupois.

THE SIAMESE ARMY IN 1885.

BY MAJOR D. VON STRANTZ.

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Department in India.*

THE organization of the Siamese army reminds one somewhat of the German Feudal times, the only difference being that in Siam the Feudatories have no power over the land but only over the people.

The inhabitants of Siam, and also those of the colonies inhabited by prisoners of war from Pegu and Burma, are divided into "krom," or departments, which are governed by high officials. The officials are required, when necessary, to provide free labour for Government works, such as canals, &c.

In case of war, the kroms are required to defend the country and the king. Each official has to raise recruits in his krom, in proportion to its size, and he himself, his sons and relations, have to lead these troops in the field. Formerly, a krom was divided into two sections—one for military duty and the other for labour, but this practice has been discontinued.

At Bangkok, there is a special department in charge of one of the highest officials, who has to keep a correct list of all the males in each krom eligible for military service.

It is said that in two days the Siamese army could be brought up to a strength of 200,000 men; these would of course be without any military training.

With the exception of the royal guard, the men of the different kroms undergo no military training in time of peace. In time of war, soldiers from the royal guard are detailed to train these troops.

Arms are supplied to them from the royal arsenal, in which 40,000 Snider rifles are said to be kept. There are, besides, in the arsenal, a variety of arms of European manufacture of obsolete patterns, the majority being flint locks.

During the raid by the Chien Hös tribe, large sums of money were expended on arms of very inferior quality.

The uniform issued to the militia is very plain, consisting of a red cotton jacket, short trousers, and cap.

The commanders of the different kroms on the frontier do not receive their orders direct from Bangkok, but through the Governors-General of their respective districts, who are vested with considerable authority. In cases of emergency they are authorized to raise troops and take the field without waiting for orders from the Government.

This is necessary owing to there being no means of rapid communication between the capital and the provinces on the frontier; but, in several

instances, the result has been that, while friendly negotiations were being carried on between the Governments of Burma and Siam, fighting was going on on the frontier.

In time of war about 3,000 elephants are impressed for service. These animals are very useful for purposes of transport in the jungle, but are worthless under fire.

A short time ago the Siamese army consisted of about 10,000 regulars (infantry and artillery).

These troops are drilled daily. In case of war, the king issues orders to the nobility, governors of provinces and of districts, to furnish contingents composed of their slaves.

Each soldier has to carry a month's provisions. Arms and clothing are provided by the Government.

The arms consist of muskets, pistols, daggers, two-edged swords, several kinds of lances, halberts, and swords. Some of the companies carry shields covered with raw hide.

The uniform is very plain. It consists of a hat made from rice straw or bamboo fibre, a waistcoat of red, blue, or green cloth, and short cotton trousers, which are worn very high up in the waist, and the colour of which varies according to the company to which the man belongs. The officers are permitted to wear a short silk coat, brocaded with gold. The commander-in-chief is expected to conform to certain superstitious customs, one of which requires him to wear on each day of the week a different-coloured suit; thus, on Sunday, he appears in white; on Monday, yellow; (Tuesday?); on Wednesday, green; on Thursday, blue; on Friday, black; and on Saturday, violet.

Regiments composed of Christians wear European uniforms.

It is said that the commanders are distinguished by names, such as "lion," "leopard," "tiger or garuda" (a mythical eagle), which are supposed to indicate their personal qualifications, and also with a view to instilling fear into the soldiers under their command.

The Generalissimo is called "Metah" (the mother of the army). It is the duty of an officer to cut off the head of any soldier who attempts to run away. A few years ago, a General, since deceased, used to carry a long lance, and on giving the command "Forward my children," he used to prick the soldiers to induce them to advance.

The time for the embarkation of an expedition is fixed by Brahmans, or court astrologers. They sprinkle the troops with holy water, and an effigy is erected which is supposed to represent the enemy against whom war has been declared. The executioner cuts off the head of this effigy, and it is considered a favorable omen if he succeeds in striking off the head at the first blow; on the other hand, it is considered a bad omen if more than one stroke is necessary. After the executioner has decapitated the effigy, the commander waves his sword, and the expedition starts amid shouts and the beating of gongs, &c.

The life of any person who attempted to cross the river before the troops would not be worth an hour's purchase; and in order to warn the inhabitants of the neighbourhood, messengers are sent on in advance to give notice of the approach of the troops, and to see that

all boats are kept moored at the banks of the river. It is said that when the troops were despatched on the expedition against the Chien Hös, a man was killed because he crossed before the troops; but this is indignantly denied by the Siamese Government.

The transport for guns and other material of war consists of elephants and bullock carts.

The colours are made of red cloth or silk, and have on them the figures of lions, dragons, and other mythical animals.

On the march officers are provided with elephants. Each soldier, while on the march, carries round his neck a piece of bamboo filled with water instead of a water bottle, and another piece of bamboo containing cooked rice dried in the sun. Towards evening, if possible, a halt is made close to a stream to enable the soldiers to take their customary baths; each soldier has to prepare his own meal. The Siamese soldiers are not put under canvas; they have to camp in the open, and fires are kept burning during the night to keep off wild animals; sentries are mounted, and it is their duty to strike the hours on the gongs. A countersign is given out to prevent misunderstandings. Should it be necessary to remain at one place for any length of time, a palisade is constructed round the camp, with small openings in it, and round this palisade a ditch is dug, outside of which another palisade of bamboos sharpened at the ends is erected. Although a camp thus fortified appears very strong, the fortifications are not strong enough to resist the charge of hundreds of elephants. Elephants are also employed for battering in the gates of cities, &c. If elephants are successful in their charge and penetrate into a city or camp, they pursue the inhabitants with great fury, seize them with their trunks, throw them into the air, and trample them to death when they fall to the ground.

The people are not overpleased when troops pass through their settlements, although they are the defenders of the country, because all eatables, fruit, poultry, and pigs, are appropriated by the soldiers without payment.

In important expeditions the king takes the command in person. It is said that in the great wars against Burma and Cochin China from 200,000 to 300,000 men, with some thousands of horses and elephants, were placed in the field.

In Paknam, which is the key of Bangkok and is situated at the mouth of the river Menam (or, to give it its full name, Chow Phya Menam),* up to the district of Paklat, further up the river, there exists an organization which resembles in some respects the old frontier service in Austria.

This organization consists of military colonies, whose duty it is to garrison the forts, and to defend them in time of war. The soldiers of this organization are not under the orders of the governors of the different kroms like their fellow countrymen, but are quite independent. To prevent them, however, from emigrating to other parts of the country and seeking employment elsewhere, they are branded, and are, so to speak, military slaves. Although these men do not wear uniform in time

* *Chow*—prince; *Phya*—chief *Me*—mother; *Nam*—water.

of peace, some of them are taught gun drill daily, but the course of instruction does not include target practice. Besides their own officers, there are instructors, specially detailed from Bangkok, to train these troops.

In time of peace, considering the size of the country, a very small proportion of the regular army is clothed in uniform, and this is distinguished by the grand title of *The Guards*, but the general appearance of these troops is anything but creditable.

Each of the two kings has a special krom from which these "guards" are mostly recruited, but some of the recruits are drawn from the kroms of the high officials. The recruiting of troops is a remunerative business, as the officials, who are deputed to raise recruits, are bribed to excuse eligible young men from military service.

The uniforms are all copied from European patterns, especially the English pattern. Several English contractors have enriched themselves by providing uniforms for the Siamese army. The Chinese have, with their natural enterprise, undertaken to make these uniforms much cheaper, and have consequently almost driven the European competitors from the field.

Uniforms of European pattern are not generally suited to Orientals, and they are particularly unbecoming in the case of the Siamese soldiers, who are short of stature and look like children.

The Siamese speak of the old and new guard, but, as a matter of fact, the latter only is considered a part of the army. The old guard consists of men who belonged to the late king's guard, and who are now pensioned or employed as non-combatants. Seeing these men, clothed in blue jackets and armed with halberds and brass shields slung with red straps, posted as sentries at the different gates of the palace, one would hardly believe that they were a part of the guard.

This guard was in former times of considerable strength, but it is now almost extinct, and the few men who are kept as sentries for the palace are those who have found favor with the present king.

On festive occasions a portion of the old artillery turns out. These men are clothed in white helmets with red *pagris*, blue jackets, and *palays*. The *palay* is the Siamese substitute for trousers, and consists of a broad piece of cotton or silk wound round the loins; when properly put on, the *palay* resembles somewhat the knee-breeches of the time of Louis XIV.

The pieces of artillery are placed on tripods instead of on gun-carriages, and the flint locks, with which the men are armed, are of little, if any, use.

The men of the old guard appear in uniform only on special occasions, and drill was abandoned long ago. They have to thank some of the old officers for still being considered a part of the army.

The "*Tamruet*," or judicial department, is on a similar footing to the old guard, and dispenses summary justice. One of the high officials of this department, whose duty it is to be in constant attendance on the king, wears a uniform consisting of a light blue coat and *palay*, with a red sword-belt, and is armed with a sword, the scabbard of which is covered with red velvet, mounted with gold or precious stones, according to the

rank of the official. The magistrates, who are members of the *Tamruot*, march before the king on state occasions, as the Roman lictors use to do.

The Amazon guard, which is mentioned by some travellers, was abolished by the present king. These women formed the guard of the king's harem, and performed the duties entrusted to eunuchs in Mahomedan countries. On special occasions, they had to march alongside of the carriages of the ladies of the palace. Notwithstanding the Oriental character of this guard, they were clothed in European uniform.

The officers of the old and new guard look upon each other with great contempt.

The new guard, each branch of which is clothed in a different uniform, is, so to speak, the fashion plate of the Siamese army.

The royal body guards look better than the other troops, the men appear soldier-like, clean and smart, and have some self-respect, probably, because they are better paid than the rest of the army.

They are divided into two bodies :—

(a.) *The Foot Guards, numbering from 300 to 400 men.*—Their uniform consists of light blue tunics with yellow facings and white or yellow buttons, according to the company to which the men belong, blue trousers and white helmets. These soldiers are also provided with boots and socks, articles which are considered luxuries by the other branches of the service. The officers are distinguished by a *palay* with a border of gold, and a sash of white, red, and gold, which is worn from left to right.

This guard is ordinarily armed with Snider rifles, but the men who form the king's escort in expeditions, &c., carry Winchester rifles.

All the captains are aides-de-camp to the king, and wear as such dark blue frock coats, with gold cords. Their handsome uniforms add greatly to the splendour of the king's suite. One of these aides-de-camp is constantly in attendance on the king. On state occasions, when the king wears European clothes, he appears in the uniform of the foot guards.

(b.) *The horse guards, numbering about 30 men*, are not a successful imitation of their English namesakes. In their case, the uniform does not make the man; they wear short red tunics of the English Life Guards pattern, with black piping, but instead of round buttons they have olivets; blue breeches with a red stripe down the centre and two stripes of lace down each side; and white helmets with red puggaris. They are armed with swords and Snider or Winchester rifles. These guardsmen are proud of their large horses, but the riders are not built in proportion to their mounts.

The country-bred horses, which are chiefly bred in the plains of *Korat* in the north-east of Siam, are of small size, like the Siamese themselves. The Siamese ponies are strong and well built. As regards symmetry these ponies are superior to the Tientsin ponies, which are of Mongolian breed.

The horse guards are employed as orderlies, and some of them are attached to the king's suite as pages.

Both the foot and horse guards are under the immediate command of the king.

This system was only introduced a few years ago, in the hope that it would make the men more attached to the sovereign, who issues his orders through a 'maul' (mouth), only holding office for a few months. The guards are quartered in the palace, and are expected to be in readiness to carry out the king's orders.

In accordance with an ancient custom, the king has a silver bugle to enable him to summon assistance in case of danger. On this signal all the officers and men of the guard have to assemble round him.

The officers of the horse guards enjoy the special privilege of belonging to the *Mohet-Lek*, or *Corps d'élite*, which includes the personal staff of the king, and is composed only of princes and the sons of the highest officials.

Its members are privileged to have a daily interview with the king.

There is also a detachment of 600 men with Gatling guns stationed at the palace. This detachment is recruited from the krom of a prince, and is commanded by him. The uniform consists of a dark blue tunic with yellow facings, white buttons and white helmets.

Two detachments of about 600 men are quartered outside the palace. The uniform of these men consists of blue, red, and yellow tunics; and they are armed with Snider rifles.

The men of the infantry, who are employed on military and police duties in the city, do not present a very striking appearance, clothed, as they generally are, in torn cotton coats.

A fire brigade, which was organized a short time ago, consists of about 300 men, who look smart in their black trousers and black helmets; they are partly armed with Snider and Thompson's rifles. It is said that these men render good service on the occurrence of fire.

The new artillery consists of a detachment of about 400 men, armed with Armstrong breech-loading guns, and clothed in a uniform of dark blue tunics with red facings, white buttons, white trousers and white helmets, with horse-hair plumes. Their captain is the son of the Minister of War, and received a commission in the English Royal Artillery.

The cavalry consists of a small detachment, the men of which wear a kind of hussar uniform, and are armed with lances; these troopers are mounted on ponies.

The body guard of the second king, who are said to be the best drilled troops, wear a light blue tunic with yellow facings, and are armed with Snider rifles.

Instead of the uniforms described above, the majority of the Siamese soldiers, when off duty, wear white cotton clothing and a kind of service cap.

As the detachments of the different branches of the service are very small, they are commanded only by captains; in fact, there are very few officers of high rank in the Siamese army.

As has been already mentioned, the body guard consists of detachments raised from the king's krom and also from the kroms of certain high officials. The officers of the detachment recruited from the king's krom are appointed by the king himself; those of the other detachments are appointed by the Mandarins. The Minister of War appoints the officers of the new guard, and he therefore selects his relatives and friends.

Frequently, however, officers of high rank and good birth, who possess influence, endeavour to get these appointments for their own relatives.

In former times there was no War Department ; this was only recently established, and was copied from European nations.

The old system has however been very slightly altered, the department of war being of little practical use.

The title of War Minister was conferred on the Governor of the Western Provinces, but his duties remained almost the same as they were previous to the establishment of the War Department.

It is difficult to ascertain the exact strength of the standing army, owing to constant changes. The average may be taken as from 3,000 to 4,000 men, but on special occasions this number may be increased to 5,000 men.

The Siamese avoid speaking of the strength of their army, as, according to Oriental custom, it is considered unlimited. The details concerning the army are not even communicated to the king.

The pay is disbursed through the Minister of Finance. Only favourite corps receive their pay regularly; the others have to be satisfied with food and clothing and whatever they can earn while on leave.

Only 5,320 ticals* are paid weekly to the whole army, of this amount 1,820 ticals are paid to the body guard, the balance being given to the other troops.

The pay of a private soldier is from 6 to 10 ticals per month. The pay of the officers commences at 24 ticals per month, and in special cases rises up to 100 ticals per month, or even more. These officers generally cover their expenses by earning money privately, and they are enabled to do this by being privileged to take leave for long periods.

The discipline of the army is generally very lax, but this is not uncommon in Oriental armies which have to serve in a tropical climate. Offences are punished by flogging with rattans, and the punishment is generally so severe that frequently the person punished dies from the effects of the flogging.

Some of the branches of the service, and especially the men employed wholly on police duty, are never drilled. The other troops are drilled for an hour in the morning and an hour in the afternoon. The drill is English. Target practice is only performed by the officers, some of whom have become very good shots. Gun drill consists of the most primary evolutions, and target practice is never carried out. Gymnastics have not yet been introduced in the Siamese army. Route marching is not practised to accustom the soldiers to fatigue, only the king's escort, which has to accompany him on his tours, has to perform long marches. Manœuvres are only known to the Siamese officers by name.

The Siamese soldier only serves for six months during the year with the colours ; the other half of the year he spends with his family, and is engaged in his private business. Sometimes, however, he outstays his leave. Very often leave is granted after the first month's service, and of course the consequence of all this is that the training of the army is most imperfect.

* 1 tical or bat=64 atts, average rate of exchange 2s. 1d.

The principal object is to make a good show at the court, and especially at grand festivals. Should a new white elephant enter Bangkok, or the king visit a temple in state, etc., the entire army parades with its bands. The bands consist of Annamese, who are taught by European bandmasters, and use European instruments. With their natural talent for music, the men soon learn to play, and the "Watch on the Rhine" is often heard at the palace and in the streets of Bangkok.

Almost all the troops are stationed in the capital. Two hundred men are on detachment at the island of *Paket* (Jong Cylon), near Penang. This island has some valuable tin mines, which are worked by Chinese labourers who require the constant supervision of the soldiers. The body guard of the chief commissioner of the North-Western frontier at Chienymai, consists of 70 men, whose duty it is to prevent the dacoits from committing raids on the British frontier.

The Siamese Government contemplates sending a commissioner, under military escort, to places bordering on the frontiers.

The majority of the men who form the garrison of Bangkok are housed. The barracks occupied by them are built to suit the climate, and are generally kept in good repair. They consist of one flat, divided into small rooms, and surrounded by a verandah. The best barracks are those occupied by the body guard, which are even furnished with beds and mosquito curtains. The other soldiers have to be satisfied with mats which are placed on the floor.

The officers of the body guard have a club, containing a billiard room and library. The sale of intoxicating liquors in this club was, a short time ago, prohibited by the king.

There are no forts of any strength in Siam. The old royal palaces and the so called "city" of Bangkok are surrounded by a wall; the residences of the Governors on the frontier also have walls. At Bangkok there are several forts, but they are not in good repair. The guns are rusty, and creepers cover the walls. The interiors of these forts are utilized as fruit gardens. The forts on both sides of the river at Paklat are not much better. The strong chain, which used, in former times, to be stretched across the river to prevent access to the city, was kept in these forts.

The Siamese take special care of the forts at Pakenam; one of these forts is situated on an island in the middle of the river, and is faced with stones and is kept in good repair. The fort on the left bank of the river is being extensively repaired, and new works are being constructed under the personal supervision of the second king; but the armament of these forts is bad, consisting, as it does, of old English guns of 1808, which are more or less unserviceable.

Similar repairs, it is said, will be carried out in the other forts in that part of the country.

Notwithstanding this, the Siamese do not hope to be able to resist a European invasion. They are afraid, however, owing to the immigration of large numbers of Chinese, that the Chinese Government may lay claim to a portion of Siamese territory; such claim they hope to be able to resist.

CAVALRY DISTANCE RIDES.

By BRIGADIER-GENERAL H. M. BENGOUGH, C.B.,

Commanding Nagpore Force.

INTRODUCTION.

I HAVE made the following extracts from the German "Militär Wochenblatt" of April 1884, describing some "Distance Rides" carried out by the Russian Cavalry, early in the same year, in the hope that we, a nation of horsemen, may be induced to practise in peace time such experimental exercises as may enable us to maintain in war that Cavalry pre-eminence which we are ready to accept as a national prerogative, but which may well be lost by over confidence and want of due training.

There is, I think, an innate prejudice amongst Englishmen against the practice of exercises in peace time as a preparation for war, and this is I think especially the case amongst English Cavalry Officers. Relying on the superior individual fitness for warfare of Englishmen and horses, we are apt to ignore the necessity for special training, and trust to the experiences of the field to teach the lessons which other nations assiduously cultivate in manœuvres and experimental practices in peace time.

Thus, in this instance no doubt, Cavalry Officers may object to "knocking their horses about" by practising such Distance Rides, as are herein described, and will point to the feats performed by our Cavalry, under leaders like Lord Lake, General Gilbert, Colonel Barrow, and others, as examples of what British Cavalry can do when required. But putting aside the point that leaders such as these are not always to be found when wanted, it is surely well for an Officer to know from personal experience, what his horses can and cannot do. Such knowledge applied at the critical moment might be invaluable.

I would urge then that Officers Commanding Cavalry Regiments, and, better still, General Officers Commanding Divisions comprising a Cavalry Brigade, might carry out such experimental Cavalry and Horse Artillery rides, in small parties, and also in considerable bodies. The Rides might well be combined with some tactical ideas, the results should be carefully recorded, and the observations and experiences reported to Head-Quarters for the benefit of the service.

H. M. BENGOUGH, Colonel,
Assistant Adjutant-General,
BANGALORE DIVISION.

BANGALORE, 14th July, 1886.

CAVALRY DISTANCE RIDES.

"Distance ride of Officers of the Cavalry School of Krasnoje, near St. Petersburg.

"Under the orders of the Commander of the Officer's Cavalry School, a detachment of 10 Officers and 9 men, with 24 horses (19 under saddle, 3 hand led, and 2 pack horses), undertook a distance ride.

"A tactical idea was given by which the detachment was to ride from Krasnoje to Vruda, Rojhestveno, Tossna, Pawlovsk by Sofia, to the barracks of the Officer's Cavalry School at Zarskoje. The distance on the map is 149 miles (English).

"It was arranged some days previously where and for how long the halts for the night should be made, where the halts on the march both long and short should come in, how the pace should be regulated, and how the care of men and horses should be carried out.

"The detachment rode on the bit, and with stirrups a little shortened.

"Left Krasnoje at 5 A. M. on 31st July.

"Arrived at Volyovo, 21 miles, at 8-45 A. M., $\frac{3}{4}$ hour halt.

"Arrived at Vruda, 20 miles, at 12-30 P. M., 2 hours halt.

"Arrived at Kalitino, 16 miles, at 5 P. M., half hour halt.

"Arrived at Rojhestveno, 15 miles, at 8-30 P. M., halt for the night.

"On 1st August the detachment started at 2-30 A. M.

"Arrived at Gorki, 21 miles, at 7-25 A. M., 35 minutes halt.

"Arrived at Tossna, 19 miles, at 11-30 A. M., 3 hours halt.

"Arrived at Pawlovsk, 20 miles, at 6 P. M., half hour halt.

"Arrived in barracks, 17 miles, at 9-30 P. M.

"The horses were so fresh at Rojhestveno, after a ride of 57 miles in $15\frac{1}{2}$ hours, that, in spite of a halt of only 6 hours, they eat besides hay from 3 to $4\frac{1}{2}$ measures of oats.

"The 149 miles were accomplished in $40\frac{1}{2}$ hours, of which $27\frac{1}{2}$ hours of actual marching, so that the average rate was about $5\frac{1}{2}$ miles an hour.

"Both the Officers and men bore the ride remarkably well, retaining their strength and energy.

"Of the 24 horses one only, that was lamed by a bruise, was brought back from Rojhestveno to Krasnoje; the remainder kept well and sound throughout, in spite of the obstacles from traffic on the roads, which were mostly main routes of communication. It should be mentioned, that by way of experiment, some light boned horses were taken, and that these also bore the ride well.

"As regards pace, it was found that the most suitable was to walk for 10 minutes, at the rate of about 4 miles an hour, and trot for 15 minutes, at the rate of $7\frac{1}{2}$ miles an hour. In the latter part of a march, the trot can be quickened to about 9 miles an hour. The main halts should be for not less than 3 hours, to allow of feeding properly."

The following is an extract from the same journal :—

"Distance Ride of 2 Sotnias* of the 15th Cossack Regiment of the Don Cossack Division.

"On 10th January, 1884, a telegraphic order was received from Warsaw for two named Sotnias, to be made up to a strength of 9 files per section, and to march on 11th on Sawischoff, to cross the Vistula, and proceed as far as Tschenstochan, a distance of about 217 miles (English), arriving there at daybreak on 14th January.

"They were to take not more than 8 led horses per Sotnia, 4 Blacksmiths, 2 Surgeons and 2 Veterinary Surgeons; and instead of the usual transport train, were to take 2 pack-horses per Sotnia, to carry the tools for destroying telegraphs and railways.

"The Sotnias were to be opposed on the Vistula by a detachment of 14th Cavalry Division.

"The command of the detachment devolved on Colonel Denissov, Commanding 10th Regiment; General Tschernosubov, Commanding 2nd Brigade, and Colonel Golubinzew, Commanding 15th Regiment, officiated as Umpires. Colonel Baikov, Chief of the Staff of the Cossack Division, and Captain Karzew of the General Staff accompanied the detachment.

"The horses were at once shod behind, and the men furnished with spare shoes.

"The Sotnias marched from their quarters at Samostje and Tomaschow early on the morning of the 11th January. The detachment was to concentrate at Janow. The road was, for one of the Sotnias, half level and half hilly, for the other, level and through forests; the distance amounted to 41½ miles and 51 miles respectively. At 4-30 P.M. precisely both Sotnias reached Janow and the detachment was concentrated.

"After a halt of 3 hours, during which the horses and men were fed, the detachment started for the Vistula. The road was covered with snow and ice, and it also rained; the march during the night was made on a regular ice track, on which the water stood, and through rain and a cutting wind.

"At 3 A.M., on 12th January, Annapol was reached; the Vistula was closed; to cross it was impossible. The detachment turned southwards, and after reconnoitring the pass of Josephov, marched on Warsaw. There was no snow along the banks of the Vistula; a complete thaw had set in, and the mud was over the fetlocks.

"After a march of 43 miles, over hill and dale, through very stormy weather, quarters for the night were found at Novo-Alexandria. On 13th January the river Veper was crossed at Fort Ivangorod in a ferry boat, which only held 14 horses, and the march continued on the Warsaw high road, which was covered with ice in the middle, and very rough on the sides. A halt was made at Garvolino. At 3 A.M., 14th January, at from 10 to 12 miles from Warsaw, the detachment was met by 3 squadrons of the Hussars of the Guard and Uhlans, and a Sotnia of the Kuban Cossacks. These retreated after an attempt to check the detachment of Don Cossacks.

*A Sotnia of Russian Cavalry—100 men.

"The two Sotnias of the Don Cossack Division entered Warsaw on the morning of the 14th January, after a march of 80 miles without night quarters.

"Altogether the detachment had accomplished over 210 miles in 72 hours, and under the most unfavorable circumstances of road and weather.

"Immediately on arrival, the Sotnias were inspected by General Adjutant Gurko, Commanding the troops at Warsaw; they marched past and attacked by Zugs (sections). The General was completely satisfied with the appearance of the men and the freshness of the horses. The strength of the Sotnias still amounted to six or seven files per section. Some 16 to 20 men of each Sotnia, who had been left behind at the last halt, came in at midday.

"These exercises are considered of much value in Russia, and with reason. They are undoubtedly a means of education for war. As a consequence, opinions have already been evoked of the desirability of regulations for the conduct of Distance Rides.

"The above examples, extracted from various Russian Military publications, show clearly both the education of Russian Cavalry and the object aimed at in its training. Further commentary is unnecessary.

"Should it be supposed, from the transformation of the Russian Hussars and Uhlans into Dragoons, that the real Cavalry element would be put in the background, and their Cavalry become a mounted Infantry, the exercises of the year 1883 do not support this supposition.

"The Russian Cavalry is, it is true, divided into branches, which other armies think may be dispensed with. The Russian War Minister is, however, by the nature of the country itself, compelled to adopt a period of service for Cavalry soldiers of six years, and this gives sufficient time to devote special attention to fighting dismounted, and to pioneer duties, without injury to the essential Cavalry element of the arm."

The above is, it will be observed, the opinion of the leading German Military Journal.

The following examples of good Cavalry marches may be of interest:—

On 16th November, 1804, Lord Lake's Cavalry, when pursuing Holkar, marched 70 miles in 24 hours, of which 36 miles during the night, and this after a long and harassing succession of marches amounting to 850 miles in about 15 days.

The Guide Corps in 1857 made a forced march in 22 days from Peshawur to Delhi, 580 miles, at the hottest season of the year.

General Stewart's Cavalry of the Confederate Army, composed of 1,800 horsemen and 4 guns, in October 1863, marched from Chambersburg to Leesburg, some 90 miles in 36 hours, and in 1883 General Morgan marched from Summerville (Indiana) to Williamsburg to the east of Cincinnati, a distance of 90 miles in 35 hours. His usual pace was a walk at the rate of about 4 miles an hour, and as he often marched 15 or 16 hours out of the 24, he was able to cover in this way from 60 to 70 miles a day. General Morgan's Cavalry carried nothing

but the rider, his arms, ammunition (100 cartridges), saddle, bridle and a blanket.

General Sir Drury Lowe's Cavalry Brigade, in Egypt, marched from Kassassin to Belbeis on 13th September, 1882, 22 miles, and from Belbeis to Cairo, 36 miles, on the following day.

At the Russian Camp of Instruction at Krasno Selo, in 1888, a Cavalry reconnaissance of 2 stations on the Nicholai and Warsaw railways was made by 8 squadrons and 8 guns, a similar force being sent from Camp to attack the reconnoitring force. The troops returned to Camp the following day. The distances covered out and back to Camp were from 75 to 80 miles, to which at least 10 miles must be added for patrolling, flanking and outpost duties.

Men and horses, both of the Cavalry and Artillery, performed their work efficiently, and returned to Camp in satisfactory condition. The men carried oats and rations with them; hay and wood were brought *en route*.

During the time the above has been in Press, a sub-division of M/B R. H. A. at this station has performed the following good Distance March, amounting to 181 miles in 64 hours. The conception of this march originated with Captain W. J. Robertson, then in Command of the Battery.

The party consisted of 6 draught horses with 2 spare horses, and 6 detachment horses, with 1 Officer, 1 Non-Commissioned Officer, 6 Gunners and 4 Drivers. The carriage was an ordinary 9-pr. M. L. R. Gun of 6 cwt. carriage and Limber.

The horses were not specially selected for the work, but received 12 days' preparation in training and feeding.

The marches were made out from Cantonments and back, according to the subjoined table.

DATE.	Hour of Starting.	Miles out from Bangalore.	Miles from last Halt.	No. of Hours work.	REMARKS.
1886.	5 A.M.				
30th July ...	.....	8 miles...	8 miles	...	Halted 10 minutes, and watered.
" ...	.....	17½ " ...	9½ "	...	Halted 40 minutes, fed and watered.
" ...	.....	26 " ...	6½ "	...	Halted 10 minutes, and watered.
" ...	Noon ...	35 " ...	9 "	7	Halted 2½ hours, fed and watered.
" ...	2-30 P.M. ...	43 " ...	8 "	...	Halted 10 minutes, and watered.
" ...	4-30 P.M. ...	47 " ...	4 "	...	Halted 40 minutes, fed and watered.
" ...	.....	56 " ...	9 "	...	Halted 10 minutes, and watered.
" ...	6 P.M. ...	65 " ...	9 "	13	Halted 9 hours, fed and watered. (66 miles in 13 hours.)

DATE.	Hour of Starting.	Miles out from Bangalore.	Miles from last Halt.	No. of Hours work.	REMARKS.
1886. 21st July ...	5 A.M. ...	74 miles ..	9 miles	...	Halted 10 minutes, and watered.
" ...	8-15 P.M. ...	83 " ...	9 "	27½	Halted 40 minutes, fed and watered. (83 miles in 27 hours.)
" ...	.....	89 " ...	6 "	...	Halted 10 minutes, and watered.
" ...	1-15 P.M. ...	96 " ...	6 "	32	Halted 2 hours, fed and watered. (94 miles in 32 hours.)
" ...	3 P.M. ...	103 " ...	8 "	...	Halted 10 minutes, and watered.
" ...	.....	111 " ...	8 "	...	Halted 40 minutes, fed and watered.
" ...	.....	119 " ...	8 "	...	Halted 10 minutes, and watered.
" ...	9 P.M. ...	125 " ...	6 "	...	Halted 8 hours, fed and watered. (125 miles in 40 hours)
22nd July...	5 A.M. ...	133 " ...	8 "	...	Halted 10 minutes, and watered.
" ...	.....	141 " ...	8 "	...	Halted 40 minutes, fed and watered.
" ...	.....	149 " ...	8 "	...	Halted 10 minutes, and watered.
" ...	Noon ...	156 " ...	7 "	56	Halted 3 hours, fed and watered. (156 miles in 56 hours.)
" ...	3 P.M. ...	163 " ...	7 "	...	Halted 10 minutes, and watered.
" ...	.....	173 " ...	10 "	...	Halted 40 minutes, fed and watered.
" ...	9 P.M. ...	181 " ...	8 "	64	Halted 9 hours, fed and watered. (181 miles in 64 hours.)

The sub-division marched 18 miles on the morning of 23rd July in 4 hours, as a test march. The horses, though somewhat leg weary, were in perfectly serviceable condition. The detachment horses were occasionally hooked in during the several marches and the draught horses changed.

The favorable conditions were : comfortable night quarters, assistance in looking after the horses and harness, plenty of good food and water, good roads, and fair weather.

The table of preparation, work and feeding, is as under :—

Table of Work and Food.

DATE.	WORK DONE.	FOOD.				
	Practice Work.	Coolty lbs.	Chenna lbs.	Hay lbs.	Grass lbs.	
8th July	12 miles ...	10	2	...	40	In draught.
9th "	15 " ...	10	2	...	40	" "
10th "	20 " ...	10	4	...	60	" "
11th "	2 hours walking exercise ...	10	4	...	60	" "
12th "	25 miles ...	10	4	...	60	" "
13th "	28 " ...	10	4	...	60	" "
14th "	44 " ...	10	6	20	80	22 miles without gun.
15th "	Exercise 2 hours ...	10	6	20	30	
16th "	42 miles ...	10	6	20	30	In draught.
17th "	20 " ...	10	6	25	20	" "
18th "	Exercise 2 hours ...	10	6	25	20	
19th "	30 miles ...	10	8	25	20	" "

The following good individual rides may be noted :—

Lt.-General Sir Samuel Brown, K.C.B., V.C., when Commanding the "Guides," rode on relays of horses from Rajanpur to Hoti Murdan and back in 10 days, or an average of 100 miles a day.

Colonel J. H. Green, 12th Bengal Cavalry, in 1878, rode a horse from Jhelam to Pindi and back, 140 miles, within 86 hours. The horse was a thorough-bred entire Waler, about 15 hands, and was put through a preparatory training of six weeks. The horse was in no way distressed by the journey, and was, his owner assured me, quite equal to repeating the ride the next day.

H. M. BENGOUGH,

*Colonel,
Asst. Adj. General.*

BANGALORE, 17th August, 1886.

APPENDIX.

The following account of a good Cavalry Exercise carried out by the 4th Russian Cavalry Division is translated from the French Military Journal "Revue Militaire de L'Etranger" for June last, which reached this station by the last mail, and should prove of interest :—

"We propose to satisfy the legitimate curiosity of all those who take an active interest in the training of Cavalry for the part that they will have to play in future wars, by offering our readers an account of a Distance Ride executed by certain Detachments of the Division of General Stroukov in the beginning of May last, in execution of the instructions contained in Order No. 1 of Grand Duke Nicholas, Inspector-General of Cavalry.

"Under the orders of the General, the 4 regiments of the division had to furnish each a Detachment, averaging from 25 to 30 men, with Officers, having as an objective to seize the bridge over the river Stchar, near the town of Slonim.

"This operation represented for the Detachment of the 10th Dragoons of Ekaterinoslav a march of 218 miles (English), to be accomplished in 4 days, for the 4th Dragoons at Kharkov, a march of 255 miles in 5 days, for the 12th Dragoons at Marioupol, a march of 188 miles in 3 days, and for the regiment of Cossacks of the Don, one of 190 miles in 3 days, or a march averaging for the first detachment, 54 miles in 24 hours, for the second 51 miles, for the third 62 miles, and for the Cossacks 63 miles.

"The Detachment of the regiment of Ekaterinoslav, composed of 25 troopers and 7 Officers, left Bielostok at 9 A.M. on 7th May for Slonim. It had a distance of about 108 miles to traverse without night quarters, making only some long halts. General Stroukov accompanied it. The distance was accomplished as under :—

	h. m.	h. m.
21 miles in	2 45.	Halt for 1 20.
21 miles in	2 45.	Halt for 1 hour.
22 miles in 4 hours, night march by lantern light.		Halt for 4 hours.
16 miles.	Halt for 2hrs. 30mins.	
28 miles. Arrived at Slonim at 6 P.M. Before entering Slonim the Detachment was ordered to gallop by General Stroukov, and the horses did not appear fatigued.		

"Almost the entire march was made at a slow trot ; the walk was only used at ascents and at soft parts of the route ; the men only dismounted when the inclines were very steep. The weather was particularly unfavorable, for it rained incessantly, making the march very irksome, especially at night ; however, thanks to the energy of the General and the influence exercised by him on the men, the operation succeeded admirably, and was carried out with an excellent spirit. The detachment of the Ekaterinoslov regiment accomplished, as shown above, 108 miles in 33 hours, of which 16½ hours on the march, and the same at rest, representing an average pace of 6½ miles an hour.

"After passing the night at Slonim, the return march to Bielostok was commenced at 11 A.M. The distance was accomplished as under :—

27 miles.	Halt for 4 hours.
16 miles.	Halt for 7 hours.
44 miles.	Halt for 5 hours.
21 miles. Arrived at Bielostok at 9 P.M., 10th May. The 108 miles were accomplished in 34 hours, of which 16 hours were used for rest, not including short halts, and 18 on the march, representing also a pace of 6½ miles an hour, or to sum up the total distance of 216 miles was accomplished in 77 hours, of which 34½ hours were devoted to the march.	

"The horses of which the Detachment was composed were taken generally from those the least trained, the least used to the ranks,

from those, in short, which represent an incumbrance to squadron commanders. In this forced march they behaved excellently, none fell out or showed signs of exceptional fatigue. They had been previously trained for 3 weeks, doing 50 odd miles daily.

"The halts were long. This was so arranged, as it was remarked, that the horses would not generally commence to feed properly until some two hours after halting. Before that time they only played with their hay and oats, and it was only after being rested that they fed, some eating as much as 23 quarterns (litres) of oats, and the others never less than 13 quarterns. On the march to Slonim they consumed more hay than oats, on the return march this was reversed. As regards water they drank plentifully, especially after the first 20 or 30 miles, but very moderately during the rest of the journey.

"At the long halts almost all the horses, even those of the strongest build, lay down for half an hour, and then got up of themselves. It was remarked that generally the second day of the march was the most felt, so that horses whose strength could be nursed for that day, could certainly march much further. In spite of the rain none of the horses were galled. This result must be attributed, said the Russian Officer, from whom we have borrowed the account of this march, which has lately been published in the "Invalide Russe," as much to the care taken in saddling as to the fact that the men of the 4th Cavalry Division are trained to rise in their stirrups at the trot, which is less fatiguing to both horse and rider. After the first 20 miles the bits were removed. One horse only lost a shoe, which was however replaced in ten minutes on the spot by a Farrier that accompanied the Detachment.

"As to the men, they marched capitally throughout, although it was easy to see at the rests that they were very fatigued. They slept where they could without thinking of their comfort. There were no excoriations. As it was impossible to procure a hot meal for them everywhere, they were given a small ration of brandy.

"The Distance Ride of the 4th Cavalry Division will certainly be followed by similar exercises by other Corps, in accordance with the orders of the Grand Duke Nicholas. We shall accordingly have occasion to return to this subject, and we shall communicate to our readers the information we may obtain regarding these exercises, to which the Russian Cavalry attach the greatest interest."

I cannot conclude this little pamphlet better than by quoting the last published words of that brilliant and accomplished Cavalry Officer, the late Captain Nolan, 15th Hussars, when referring to some experimental forced marches made under the orders of General Sir George Berkeley, formerly Commander-in-Chief of the Madras Army:—

"The excellent example set by Sir George Berkeley in India might be followed up at home with great advantage to the service; the capabilities of our Cavalry horses of the present day should be severely tested, and the saddles should be tried, and experiments made to ascertain how sore backs may be avoided."

BANGALORE, 27th August, 1886.

SOME REMARKS ON THE SUPPLY OF ARTILLERY AMMUNITION IN ACTION.

BY MAJOR JAMES FOX-BROUGH, K.B., R.H.A.

THE above appears to be one of the points which deserves attention at present.

Captain Grierson, in a recent number of the Journal of the R. A. Institution, states, with reference to the German armies, that, "in 1870, on the march, every gun was followed by its ammunition waggon, the remaining waggons marching at the tail of the battery. On going into action two échelons were formed. The first, consisting of three ammunition and one store waggon, followed the guns closely everywhere. The second échelons, comprising the remaining waggons, were massed by Brigade Divisions, and moved by order of the Divisional Commanders. On the battery taking position, the first échelon ammunition waggons were placed between the guns of the division to which they belonged, in the same line with them, and at the ordinary interval, and the rule was to empty the waggon first, leaving the gun-limber supply untouched as long as possible."

The method of the British Service is to use the ammunition in the gun-limbers and replace it from the waggons. What the Field Artillery Manual lays down is:—

"When a battery takes up a position for action, the waggons, spare men and horses, should be drawn up in charge of the captain, about 200 yards in the rear of the least exposed flank of the battery, in any formation which may be best suited to take every advantage of cover afforded by the nature of the ground. The distance of 200 yards is merely laid down as a convenient distance for drill purposes; the great object of the officer in charge of waggons should be to keep them *out of fire and yet within easy reach* of the guns, so as to act as an immediate reserve. If, therefore, good cover can be obtained from 100 to 500 yards from the guns, he should avail himself of it."

To replace the ammunition in the gun-limbers, one waggon per division is sent forward, reversed in rear of the interval between its guns, and the ammunition transferred from the waggon body boxes to the gun-limbers, thus leaving the waggon-limbers full. The order, however, permits that: "Under pressing circumstances, when a speedy completion of the ammunition is necessary, the limbers of the ammunition waggons may, on their arrival at the guns, be exchanged for those of the gun-limbers."

The two systems are, therefore, different. The question is, which is the best? The Germans, by their system, expose three waggons per battery in their fighting line, and they increase the frontage required for a battery by three ordinary intervals, or very little under 60 yards. The next point that attracts attention is, why, if it is only necessary to preserve the ammunition in the gun-limbers from being used, bring up *three* waggons? Two waggons, *i.e.*, one per half-battery, would be sufficient to prevent the gun-limber ammunition being touched; and by placing these two in rear of the centre of each half-battery, and

reversing them there, the distance to be travelled by the gun-limbers bringing up the ammunition would not be excessive, and the frontage of the battery would not be increased. If, therefore, there is a tendency to adopt the German system, this point seems worthy of consideration. Also, if but three waggons accompany each battery into the fighting line, why oblige each gun to be followed by its ammunition waggon on the march? Therefore, again, the question arises, if we adopt the German idea as to keeping the ammunition in the gun-limbers intact, why not limit our first *échelon* to two waggons per battery and march the remaining waggons by brigade divisions in rear of the troops the artillery is acting with, as is done at present with all the waggons?

As far as I can see, there are four methods of supplying ammunition to batteries in action to choose from:—

(1.) By transferring the ammunition according to the method above quoted from the Field Artillery Manual, from the waggon body boxes to the gun-limbers—our ordinary method.

(2.) By exchanging the gun-limbers for those of the waggons—permitted under pressing circumstances.

(3.) By bringing successive *échelons* of waggons into the fighting line—a system not recognized by us as yet.

(4.) By multiplying the number of boxes, *i.e.*, instead of each large, heavy and clumsy ammunition box of the present equipment, substitute two or three boxes of iron-plating, which could carry as many rounds as the present boxes, and occupy no more space. If for each of the present ammunition boxes three of iron-plating could be devised, surely it would be easy enough to transfer these boxes from the waggon bodies to the gun-limbers, and thus obviate the delay of unpacking from one lot and repacking in the other?

Even if we adopt the German system, and determine that a proportion of waggons are to accompany each battery into action, circumstances might arise during an engagement which would oblige the ammunition in the gun-limbers to be used either partially or wholly, when the possibility of transferring a fresh supply to them by boxes, instead of round by round by hand, should lessen the chances of casualties.

As regards the number of waggons which should follow with each battery *on the march* to battle, it would surely prevent confusion to limit the number to whatever be decided on for the first *échelon*. To permit each gun to be accompanied by its waggon on the march, and then, on reaching the scene of action, to eliminate the second *échelon* waggons, might tend to confusion and possibly waste of time. Also, by marching more waggons with each battery than it would require as its first *échelon*, would occupy space which might, one would humbly think, be better occupied by troops. Therefore, as above suggested, why not let the second *échelon* waggons of *all* the batteries marching together be massed in rear of the column of troops? And, similarly, for the Corps Artillery, why not limit the waggons with each of its batteries to those of their first *échelon*, and march those of the second *échelon* in rear of the rear battery?

RAWAL PINDI, 1st January, 1887.

HINTS ON MILITARY LANDSCAPE SKETCHING.

BY MAJOR L. F. BROWN, R.E.

IN military operations an accurate freehand sketch of country taken from some commanding point is often quite as useful as a rough plan, whilst at the same time it conveys an idea of the character of the country reported on, which the best survey would never do.

As far as I know, no system of making an *accurate* sketch has ever been taught in the army ; and as accuracy is of the highest importance in all military reports, I propose to give a short description of a system which I have frequently put in practice myself.

Many officers can sketch quite sufficiently well to draw a tolerably accurate outline of a house, a village, a bridge, or small portion of a hill, but fail in combining the whole view which lies before them into a landscape drawing.

To such, perhaps, this system will commend itself, so that by the gradual training of the eye into proper ideas of proportion, the habit of correct drawing will become instinctive.

Science is measurement ; but how can a view of open country be measured ? Yet if it could be measured in the same way as a plan or picture can be measured, nothing would be easier than to reproduce any landscape.

Every view can be conceived to be a view seen through a picture frame, and if we could stretch strings or wires across the picture frame corresponding with lines drawn on our paper, we could reproduce the scene before us, square for square, exactly as in copying a plan. The eye, though in reproducing a view on this principle, must be always applied exactly in the same spot, otherwise the wires would appear to move over the view beyond. This difficulty might be overcome by viewing the landscape beyond through a small fixed peephole placed at the proper distance in front of the picture frame, and it would be easy to design a portable apparatus constructed on this principle by which a landscape might be exactly measured. Every officer though now-a-days has or can borrow a prismatic compass. I will show how this can be made available for landscape sketching, and beg the reader to refer now to the specimen sketch.



The eye takes in at one view from 40 to 60 degrees ; set up therefore the prismatic compass (on a stand if you have one) and see how many degrees your view will embrace. In this case it is from 171° to 229° .

Draw vertical lines on your paper representing the compass hair at every ten degrees, leaving intermediate degrees to be judged by the eye,

or a small scale may be drawn on paper to help to fix the units of degrees.

In this case each degree is represented by $\frac{1}{8}$ th-inch and each ten degrees by $\frac{1}{4}$ th-inch.

Draw a line H H horizontally across the paper to represent the horizon.

Now take bearings to the most distant outline of your view, selecting any prominent points or features. Here we have selected 172° , 177° , 189° , 195° , 201° , 214° , 218° , 221° . Set these off on the paper. It is easy to get the heights correctly; for instance 218° is the highest point, 177° considerably lower, and 195° lower than that again.

If the slopes of any one of these hills, say 195° , are drawn correctly, it will be hardly possible to make a mistake in the height of the other hills.

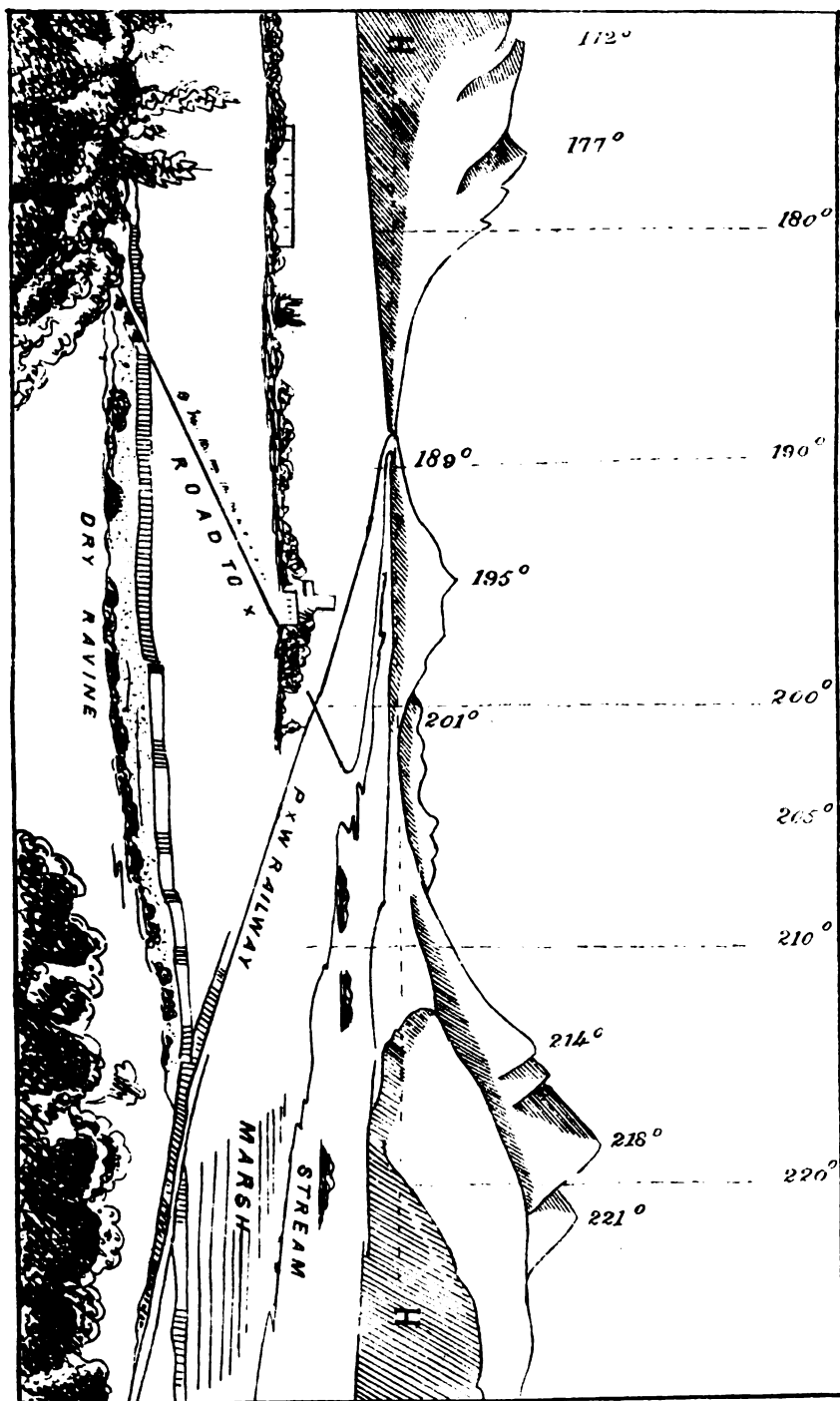
Having drawn the distant outline correctly, this becomes a scale for the rest of the picture.

For instance, the tower is a little to the right of peak 195° , and its top is the height of that hill below the horizon. The long building to the left comes under the peak 177° . The bridge over the dry ravine on road to x comes obliquely under this, and the railway bridge comes under the peak 214° , but a little higher in the picture. Measure as many prominent points as you like in the above manner, and the rest of the picture will then begin to fit in like a puzzle.

For instance, the railway line runs straight from its bridge to the gap 189° . The road runs from the bridge to a point under the tower; it then curves a little beyond the hollow 201° , and finally runs to the gap 189° . The stream just clears the road at its upper end, and so on.

The sketch can now be finished up with printed explanations, according as the text books teach you, or according to the particular object which your sketch is intended to explain; and in a military drawing it will often be correct to give prominence to certain important objects, which, by reason of bad light or partial concealment, do not readily catch the eye when casually viewing the scene. In this way a good military sketch may be actually better for the purpose for which it is required than the best photograph.

In this paper I do not give any artistic hints, as these can be learnt from books, from the study of nature, and from practice.



The two following Articles are extracted from the *Journal of the Military Service Institution* of the United States of America.

SMALL-ARMS AMMUNITION SUPPLY.

By FIRST-LIEUT. GEORGE S. WILSON, *Twelfth Infantry.*

THE problem of ammunition supply to meet the heavy demands of breech-loading arms has received a great deal of attention in all European armies. Means of insuring the supply to the army, and of handling cartridges, from the time they leave the depôts until fired at the enemy, have been worked out in detail and embodied in regulations. The commander, from the company to the head of the army, understands in advance what will be furnished and the action necessary on his part to supply his men with cartridges.

With us it would appear that the subject has been neglected. Breech-loading arms have been in our hands well on to twenty years. All military men recognize the fact that the successful use of this arm depends upon means of supplying ammunition in quantities far excelling any former experience of ours, yet should war come to-morrow there would not be a commander, high or low, who could refer to a regulation, or official suggestion, governing either the quantity, the transport, or the handling of our cartridges.

The question thus being an open one, I will present for consideration a hasty review of the different systems of ammunition supply in armies where the subject has received that attention which its importance deserves ; and at the same time I will offer a few suggestions applicable to our own service.

For convenience of discussion the subject may be treated under three heads :—

First.—The total supply.

Second.—The wagon transport.

Third.—Service of cartridges to the fighting line, and the quantity carried by the soldier.

In a paper entitled "The Supply of Ammunition to Infantry on

the Field of Battle," written by an officer of the French army, and republished in our "Ordnance Notes,"* is this table:—

Manner in which the ammunition is carried.	No. of cartridges carried by enlisted men.						REMARKS
	France.	Germany.	Austria.	Italy.	Russia.	Switzerland.	
By the soldier ...	78	80	70	88	60	100	*By baggage wagon. Does not follow Company to battle.
Regimental wagons ...	18.1	19.2	52.5	...	60	35	
Or packs ...	...	*11.5	...	...	...	...
Total. First supply for fighting line ...	96.1	99.2	122.5	88	120	135	† Plus 22.5 by Reserve for the Army.
By Division Park ...	40.4	20	22.5	60	60	35	
Total supply for field of battle ...	142.5	130	145	138	180	170	
Corps Parks ...	31.5		6†	50		30	

It will be noticed that the total of small-arms ammunition for the field of battle reaches the maximum in the Russian army, while Germany provides the smallest supply.

The army corps parks being in the nature of a reserve supply their consideration will be left out of this paper, the object of which is to discuss the supply for the field of battle, which is at all times with the troops ready for use. This supply commences in the soldier's pouch, and ends in the divisional train.

The writer who furnished the table just read, referring to it, says: "Must we then conclude that this supply is absolutely sufficient for the exigencies of modern combat? Such (he continues) is not the opinion expressed by the commission on field firing, which assembled at Châlons in 1878, and according to which every man should have at his disposal one hundred rounds, exclusive of those in the battalion wagons and other ammunition columns. Nor is such the deduction we should draw from a study of accomplished facts in the Eastern war of 1877-78, for in the Russian army the consumption of ammunition during that campaign frequently reached a higher figure even than that named by the Châlons Commission, while in the Ottoman army it attained proportions truly extraordinary * * * certain battalions being furnished five hundred and seventy rounds per man." Again (from the same writer), "experimental firings of the 11th German army corps showed that an average of 100 to 120 cartridges per man was fired in three or four hours time, firing with the utmost deliberation, and the greatest economy of ammunition."

* Most of the data in this paper is taken from the "Ordnance Notes," published by the Chief of Ordnance at Washington.

In the English army, according to Sir Garnet Wolseley, the ammunition supply is :—

In possession of troops	...	...	rounds 70
Regtl. reserve in wagons	...	...	" 30
Field " " with division	...	...	" 30
" " " " corps	...	...	" 30
Grand dépôts and intermediate reserves	...	...	" 320
Making a total provision of...			... rounds 480

Speaking of ammunition which should be on hand for British troops in their irregular service in India and other quarters of the globe, where English arms sustain English commerce, Wolseley sums the matter up by the conclusion that "special calculations must be made in each instance to meet the peculiar circumstances of the case." With a simple reference to this sentence, I will dismiss from consideration our own irregular warfare against the Indians on the plains and among the mountains of the West.

So far as actual expenditure of ammunition in battle is concerned, some data may be introduced, but it is proper to remark that all authorities agree that calculations for supply should not be based on any general average of expenditure in battle. The reason is clear; a great portion of troops in battle may not fire a shot, but as no human foresight can determine which battalion will, and which will not, become hotly engaged, the only safe estimate of supply should be proportioned to the possibilities of the tactical unit. Thus, in the 1st Prussian army which attacked the Austrians on the Bestritz river at 8-30 A.M., in July 1866, and remained heavily engaged all day, the average expenditure was only 12 rounds per man, though in one regiment it rose to 72 rounds, and in the case of two companies to 80. The 2nd division of the French Imperial Guards, at Rezonville, fired an average of 20 rounds. The French army of Metz expended only 25 rounds per man, and in the same campaign the 12th German army corps expended in the various battles from 6 to 15 rounds per man. But on the other hand, at Plevna, some Turkish battalions fired over 150 rounds per man.

The United States has had no war experience with breech-loading arms, therefore it is to those countries that have had such experience that we should look for instruction as to the supply of ammunition we would need when war comes. What then is the lesson which the experiences of the armies of Europe teach us? In my opinion it is, that an American army going to war should have at hand more ammunition than any other army of civilized countries.

In demonstration of this proposition, look at the Russian, the Turk and the German. The Russians have campaigned in a rough country of great extent and bad roads, and know the value of being, in a measure, independent of reserve dépôts, and they carry with the troops more ammunition than is provided for any other army of Europe, except the Turkish. With us, condition of country and of roads would be somewhat similar. The Turkish army which fought the Russians, largely made up of raw levies, poorly organized, and wanting in discipline, expended

enormous quantities of ammunition ; and, it may be remarked, owe much of their temporary successes to the fact of being so well supplied in that respect.

In lack of discipline and defect of organization, we should not shrink from comparing ourselves, in a certain degree, with the Turk. On the other hand, Germany, a master in the details of the art of war, provides the smallest number of cartridges. But for us to follow Germany in this respect would be to fly in the face of the true deduction to be drawn from a comparison of her ammunition supply with that of other countries.

German officers are, perhaps, the best trained in the world, while the discipline of their army is the development of generations of military service and subordination. In such an army, control of men, and of their every action, reaches the highest possibility, and no cartridges need be wasted or uselessly fired. With us these conditions are reversed. Our national characteristics of self-assertion and of individuality of thought and action—our lack of training, and lack of inherited discipline, our habits of wastefulness—all go to make up a soldier who would consume ammunition only equalled in quantity by the punishment he would inflict on an enemy if he but keep his pouches filled. Again, could we hold as large a proportion of the force in reserve as do the Germans ? Would not the American soldier, when brought under the enemy's guns, demand to be placed where he could return the fire ? If so theoretical tactics should yield to the national temperament, and more cartridges be forthcoming. One other point, and I will pass to another phase of my subject. Long-range firing is still being discussed by military men, the question mainly hinging on the ammunition supply. It has many advocates and able opponents. I will not quote from these discussions. All remember how effective was the long-range fire of the Turks, and the serious effect it had on the Russians at from 1,200 to 2,000 yards, and even greater distances. With us I think the first battle would settle the question in favor of long-range firing. I predict that the range of our firing will be determined only by the range of our rifles. If for no other reason, I should advocate it as a mere matter of diversion. Although over twenty years have passed since I have heard the whistle of a hostile bullet in regular warfare, I still have most unpleasant recollections of situations where we were placed subject to the enemy's fire without being able to return it. No situation in which a soldier is likely to be placed is more trying to his courage. Nothing causes a greater sense of helplessness. Under such circumstances long-range firing could be made a sustaining power to the soldier's fortitude. This new phase of warfare would also consume additional cartridges.

In view of all these demands, and looking to the experiences of the armies of Europe, I would advocate a supply of at least two hundred rounds of small-arms ammunition per man, or twenty rounds more than is provided for any army in Europe.

The subject of wagon transportation of ammunition now claims attention. In the French army a 4-horse ammunition-wagon is attached to each battalion. It is provided with 3 boxes, each divided into two un-

equal parts. The cartridges are enclosed in canvas-covered bundles furnished with a handle, containing 28 packages of 6 cartridges each. The load of each wagon is therefore 18,144 rounds,—about 2,000 pounds in weight. Each of these boxes is provided with 12 canvas wallets for carrying ammunition to the fighting line. The divisional train consists of thirty-two 4-horse ammunition-wagons of the same capacity and pattern of the battalion-wagons, a forge, 4 horses; a battery-wagon, 4 horses; a forge wagon, 6 horses; and three commissary-wagons, 2 horses. The personnel of this train is: 1 second captain, 2 lieutenants, 1 quarter-master-in-chief, and 7 other quarter-masters (one of whom is an artificer), 1 quarter-master-sergeant, 6 corporals, 1 farrier, 2 shoeing-smiths, 2 smiths, 2 carpenters, 6 artificers, 2 collar-makers, 2 trumpeters and about 150 drivers. If this is a sample of the force the French require to manage a train of thirty-eight wagons, we have nothing to learn from them in that business. On this side of the Atlantic the most reckless general officer would hardly assume the moral responsibility of enveloping one small team in the double and twisted profanity of four drivers, nor would it be necessary. In our language one teamster may generally be relied upon to swear six average Kentucky mules through to the end of the march. But the French seem to be satisfied; for my authority says this train was generally able to follow the troops wherever they went.

In the German army the company baggage-wagon carries 2,880 cartridges. As a rule, it does not follow the company to the battle-ground, and unless the cartridges are previously distributed this supply is not readily available. There is one battalion ammunition-wagon made of iron and drawn by six horses, which carries 19,200 rounds. The divisional small-arms ammunition-train consists of 21 wagons (as above) for cartridges, 1 battery-wagon, 1 forge and 1 baggage-wagon. The train is divided into parts, but for what purpose I have not been able to learn. Why these six-horse wagons carry so small a load—19,200 rounds—is not explained.

The Austrian battalion has ten 4-horse ammunition-wagons, containing each 21,000 cartridges. The divisional train consists of about 200 men, 200 horses and 39 wagons. It carries 22.5 cartridges for each infantry soldier and a supply of artillery ammunition. This is another case of each driver having a horse to himself. The Russians have with each company a wagon or cart holding 11,340 cartridges. It follows the company when the latter is detached; at other times the wagons are grouped by battalions. The divisional train for infantry ammunition has 22 wagons and carries 60 rounds per man. In mountainous countries this train did not give satisfaction, and a number of Russian military men advocate a lighter wagon and the use of pack animals. The Turks use two-wheeled carts, which in their late war accompanied them on the march when they could do so, but in difficult countries packs were found necessary. A battalion has 24 to 30 of these animals, each carrying two boxes of 1,000 rounds. In the English army ammunition is carried with the battalion in 3 two-horse carts, each containing 9,600 rounds. The divisional train carries 30 rounds per man. Provision for

pack animals is made where wagons cannot be used, as is the case in many places where the British army operates. In some instances they use mules, others camels, and in the Bori country men (natives of the country) were used for the purpose. In all of these armies trains move with their commands, unless ordered otherwise for the time being.

In looking over the system of ammunition transport in these armies there are some points it would be well to remember, but in matters of transportation we may safely rely upon our own knowledge and resources, to excel in good results, any management which requires an average of five men to the team to move but indifferently loaded trains on good roads. The proportion of ammunition between the battalion and divisional trains is of interest, because the former is the supply for the emergency of sudden battle, while the latter is more in the nature of a reserve.

I like the Russian plan of a large supply ever present with the troops.

In our service I would suggest 20 rounds per man in the company baggage-wagon, 70 in battalion-wagons and 70 in divisional trains. Assuming that our infantry battalions will be of 4 companies of 100 rifles each, then 2,000 rounds would be in the company baggage-wagon, and 28,000 rounds—or just one wagon-load with the battalion train. The German plan of a few cartridges in the company baggage-wagon is peculiarly applicable to a system of which I shall speak further on.

A distinctive color for wagons of each kind of ammunition, infantry, cavalry and artillery, should not fail of adoption. Not merely letters and marks, but the whole wagon, from running gear to canvas cover, should have its color to correspond to the trimmings of the arm to which it pertains. On the other hand, the Germans and the Austrians require a battalion-wagon on becoming empty to go back to the divisional train; the former to replenish its boxes with ammunition and the latter to hitch its horses to a full wagon, and then return to the engaged troops. Why do this at the expense of twice the time and double risk of accident? Why not at once order up a divisional wagon by fast courier, or field telegraph, leaving empty wagons to go back to the divisional train to stay there until the battle is ended. In furtherance of this idea all infantry ammunition-wagons should be of the same pattern, and some liberal system adopted of messing train men and foraging animals wherever they might be found on duty. Although in some quarters there is objection to a teamster carrying his kit on his own wagon, I see none. In addition to his kit he should have on his wagon, when battle is impending, at least two days' rations and two days' short forage for his teams. This would lessen the ammunition load about 2,000 rounds, but in the end there would be compensating advantages. The ammunition train thus made up, wagons would be interchangeable—that is, battalion-wagons when emptied could go to the divisional train, and loaded ones from the latter take their place with the battalion. The emergency over, all could be straightened out at leisure. With this plan, the temporary mixing of trains would not create confusion, while the distribution of ammunition to points most needing it would be facilitated.

We should stick to our six-mule teams, at least until our country

roads are replaced by better ones. The heavy lumbering wagon of the late war, however, should not be allowed to show itself again. An average load of ammunition for a six-mule team would be from 25,000 to 30,000 rounds.

Good, well-equipped, and well-managed pack-mules could carry 2,000 rounds each, against 4,000 to 5,000 per animal in team. The use of packs would more than double the forage consumption and the personnel of transportation, and would cause the entire ammunition supply to be handled twice a day, at the expense of no little time, night and morning. Therefore, if roads permit wagons, packs should not be used. But an auxiliary pack-train should be on hand, some place in the rear to be taken up in case of need. And it is of the utmost importance that this train be well manned, under experienced boss packers, and in all its appointments splendidly equipped. Nothing pertaining to field transportation is so imperatively demanded as experience and competency in the use of pack animals.

In regard to the disposition of trains on the march, circumstances should govern.

The system of serving ammunition to the fighting line in European armies may be summarized as follows: Battalion-wagons follow their respective commands to a sheltered spot not far to the rear of the line, each placed by the battalion commander and controlled by him. Company commanders of their own action draw on this wagon, and in the same way battalion commanders draw on the divisional train. After exhausting their own supply troops may draw on other wagons.

No formal demand nor receipt is exacted. With the Russians, who have a wagon to each company, but one to the battalion follows; the others are grouped by battalions farther to the rear. Flags by day and lanterns by night are placed a short distance to one side to denote the location of the wagons, but not so as to discover them to the enemy.

Communication is kept up between the wagons and the troops by mounted orderlies. To overlook these simple and common-sense precautions might cause the loss of a battle. On going into battle, the Austrians give out 10 rounds per man from the battalion-wagons. At the beginning of an engagement a party of two to four men is detailed in each company to go to the wagon, where they divest themselves of equipments, and with the wallets and bags provided for the purpose, and kept with the wagons, they commence carrying cartridges to their companies. The German soldier carries 500 rounds at a load, the Frenchman 360. If the distance be considerable, say 1,000 yards, 500 rounds is too heavy a load. The Germans hand the cartridges to the fighting men, but the Austrians empty them on the ground for each man to help himself.

Except on the defensive, under cover, I should think the latter plan faulty, if not disastrous. In most armies men are specially trained for this duty, but the Austrian captain may send musicians without reference to their special fitness. For this all-important duty none but the best of men should be selected, and the most reliable and courageous non-commissioned officer in the company should be in charge of the party. If

additional force is needed to fetch ammunition, it is taken from the supports or reserves, never from the fighting line. The Turks on the defensive placed boxes of cartridges along the entrenchments. Pack-mules were used by them to deliver cartridges to the skirmish line, and they performed the duty well.

In this outline description I have tried to present the prominent features of cartridge-service in the German, French, Austrian, Russian and Turkish armies. Turning to our own service I don't see how we could do better than adopt substantially the same means of distribution. I should think, however, that at this point the mule might step in and assume that importance for which he is so justly celebrated in our army. The war of 1861-65 demonstrated the fondness of the American general and the American soldier for temporary entrenchments on the field of pitched battle. With modern arms cover is still more desirable, and the next war will probably bring into use regular entrenching tools as part of the equipment of a company of infantry. Not a mere makeshift, such as a trowel-bayonet, for instance, but serviceable spades and picks. Hence, I say, these tools will be a part of the equipment of a company—not of the individual soldier. Means of transportation for these tools other than the soldiers' legs should be provided, and of a nature that would insure their presence ever with the company. Pack animals would answer these simple but important requirements. Two mules could carry the entrenching tools for a company of one hundred men. When the tools would be called into use, ammunition would be required, and the mules relieved of one duty would stand ready for the other. Thus, incidentally and without increase of forage supply or impedimenta, each company might have the services of a friend who, if properly rigged, could be of material help in delivering cartridges to the fighting line. For pack rigging I would suggest wool-lined panniers to receive the loose packages of cartridges, with cases made of heavy leather to fit in the panniers for the spades and picks to rest in. In unloading the tools the cases would be taken out, leaving the panniers ready for instant use with cartridges.

The soldiers' cartridge equipment in European armies, consisting of a pouch, carries about half of his personal supply. The remaining half—30 to 40 rounds—is in the knapsack. English infantrymen have a ball-bag, which habitually carries 10 rounds, but holds 40 when required. In taking extraordinary supply of cartridges the German soldier puts packets in his havresack, and pockets and buttons them inside of his blouse. This is in addition to his knapsack supply.

The objections against the knapsack as a cartridge receptacle are manifest. General Ingalls estimated that 25 per cent. of the army of the Potomac threw their knapsacks away, while in Sherman's army not half of 25 per cent. of the infantry retained them. Again, it would often be necessary to order that they be left behind, and, in that case, the ammunition which would of course be taken from them would be in the hands of the soldiers without means on their part of taking care of it. But in the absence of these objections there remains the more serious difficulty of quickly getting at the supply in time of need.

The use of the haversack for cartridges is condemned. Soldiers must eat, and that article of equipment should be sacred to its legitimate use. The English ball-bag may in a measure supply the want, but it has the fatal objection of being an extra piece not in constant use, yet to be constantly carried and cared for, that it may be on hand at some future time, for possible use in battle. Only a high state of discipline, and the never-ceasing watchfulness of officers, would prevent men from throwing such things away. Officers of experience with volunteers will appreciate the force of this objection. The fewer pieces a soldier has to carry the better condition is he in to march and fight. To get over the knapsack difficulty the French have experimented with an equipment consisting of four pouches, of twenty-four cartridges each—two on the waist belt and two suspended on the shoulder-blades by a system of straps and braces. It is cumbersome and complicated. To get at the reserve pouches straps and braces have to be unfastened and hooked up to prevent their loss, and finally the knapsack (with no blanket-rolls) has to be taken off before the pouches can be replaced on the back.

In dwelling, as I have, on the demerits of the universally accepted mode of loading a soldier with his battle supply of cartridges, I have done but little more than condense what has been more fully and better expressed by distinguished military men in this country and Europe. The whole thing is admitted to be unsatisfactory and inadequate to the necessities of the breech-loader, and the practice is only continued because no better plan has yet been proposed.

A study of the subject only confirms the conclusions which military men have deduced from experience and observation, and which may be summarized in few words. Breech-loading arms demand large quantities of ammunition. Celerity of movement require light marching loads on soldiers. Cartridges should be independent of other equipment. It is of the first importance to secure the best means of quickly augmenting the supply of ammunition at the beginning, and of replenishing it during the progress of battle. Cartridges should be in convenient shape for handling.

I have devised a method which I think satisfies these demands. It begins at the armoury in packing the cartridges, as follows: A strip of light cotton-cloth, $7\frac{1}{2} \times 22$ inches; near the middle, running from end to end, sew a strip of the same material, $1\frac{1}{2}$ inches wide, and provided with 20 loops, $\frac{1}{2}$ inch apart, for individual cartridges. Pack the cartridges in the loops. Fold the top edge, or flap, of the wide strip over the heads of the cartridges, bring it down and stitch it to the opposite edge at the ends and between every second and third bullet. This flap secures the cartridges in the loops; to get at them, break the stitching, exposing a few at a time. To each end of this "packet" securely sew a strip of the same material 2×25 inches. The other ends of these strips securely sewed together, or use one strip 48 inches long instead of the two. All ammunition to be kept up in these packets instead of in the paper case as at present. In this shape the cartridges go to the soldier convenient for instant use. He takes the packets, swings them over either shoulder "shot-pouch fashion," or ties them around the waist, over the permanent belt, and is ready to march or fight. When

emptied in battle the packet is thrown away. The packet is not designed as an accoutrement for the nominal supply of cartridges on the soldier, but as a means of dispensing altogether with accoutrements and makeshifts for the battle supply, and to facilitate the handling of cartridges.

No resort to knapsacks, haversacks, blanket-rolls, or other makeshifts necessary—no special accoutrement to add to the soldiers' load for months before needed, and which at best is not as convenient as this simple packet, which is practically without weight or bulk, and whose carrying capacity is limited only by the weight of cartridges a soldier could march under. No wallets and bags needed for distribution from the wagons to the line of battle, such as the French have thirty-six of to the wagon, and the English and German nearly as many.

The advantages of the packet extend to all phases of cartridge handling, but perhaps none would appreciate it more than the man who, when hotly engaged, should receive from the ammunition party one or more, which he at once slips over his head, and his cartridges are safe and more easily got at than if in the box or belt. Contrast his condition with the man, similarly situated, who should have two or three of the present paper cases of cartridges put into his hands.

To supply more ammunition for battle, and at the same time put a less quantity on the person of the soldier while on the march than is done in other countries, may seem paradoxical. But I believe that to be the true policy. Celerity of movement is so potent a factor of success in war, that our study should be how to sustain the minimum number of cartridges on the soldier—not the maximum. Stonewall Jackson had the genius of using men's legs, and he was the scourger of the army of the Potomac. I would stick to old traditions, and fix the soldier's marching load of cartridges at forty rounds.

To meet this condition of so small a supply of cartridges on the soldier, it is of the first importance to provide the best obtainable expedient for quickly handing him his battle supply from the wagons, and in a shape to enable him to take care of it, and have it at all times convenient for use. I think this packet meets these requirements. To anticipate some of the objections which may suggest themselves against the proposed system.

First (which really includes everything), would it answer the purposes for which it is designed? Actual experience alone can conclusively answer this question. To say that it is worthy of trial is the utmost that should be said of any new and untried device. Second, its durability; made of common cotton-cloth, of the strength of goods in a shirt, the packet would stand hard usage in service for any length of time that extraordinary supply of ammunition would be needed in the hands of troops, say six or eight weeks. Third, the cost. The extra expense would be but trifling—not over one-fourth of one cent. per cartridge.

At this rate 100,000 infantry could expend in a battle thirty rounds per man, and the extra expense chargeable to the packet would be but \$7,500. But if the system would facilitate the handling of cartridges, cost is not properly an objection, for at best war is an expensive game, made doubly so no less by parsimony than by waste.

In conclusion, I think there are two conditions in themselves tending in opposite directions, which it should be the effort of military men to reconcile to each other. That is, a large battle-supply of ammunition and a light marching load on the soldier. In harmonizing these conditions it is necessary, first, to divest the soldier of everything useless or superfluous.

And in this connection, it may be proper to fire a few interrogation points at a questionable piece of impedimenta which perhaps it were better to relegate to a position of rest alongside that friend of its youth, the old flint-lock musket. If its days of usefulness are really gone, we need its place for cartridges. I refer to the bayonet. Why do we keep it? Is it because it has kept abreast of the breech-loader and the machine-gun? Or is it sustained at the soldier's side by a sentimental regard for its past services? We are told that it is still formidable. Where, when, and how? You can't convict a man of murder before you find the corpse. That is a principle of law. Then why allow the bayonet to revel in the reputation of a man killed, and no corpse in sight? The effectiveness of a weapon is determined by the nature of its opponent. With breech-loaders, long range, and open ranks, how does the bayonet stand? The moral effect, it is claimed. That is well enough; moral effect may be tangible power, if allowed to have its own way. But when we reflect that the bayonet displaces, by actual weight, eleven cartridges, and by extra inconvenience at least four more, I contend that these fifteen metallic cartridges could shoot the phantom of moral effect to death.

The infantry is now recognized as the real power of an army. How did it gain this position? By prodding men to death with a bayonet, or by shooting them? With breech-loaders, if the infantry maintains its place, every means must be used of solving the important problem of ammunition supply. A soldier is loaded with all the cartridges he can march under. Throw the bayonet away, and he could take fifteen more. Is it remembered what less than fifteen cartridges per man did in the hands of the Germans in July, 1866? They defeated and humiliated one of the great powers of Europe. The bayonet, too, was there on that bloody field of Iodowa, and yet when the battle was ended, of all the 27,000 men who lay dead or wounded, not one could it claim as its victim. What does the bayonet cost an army? I do not know, but here are some of the figures for a twelve months' war, with an army of 500,000 men. It at once and continuously crowds 7,500,000 cartridges out of the soldiers' pouches. It sends this ammunition miles to the rear, where it imposes the expense, and a hundred-fold worse, the impedimenta of over 600 wagons and 4,000 animals, including the furnishing of the extra forage and supplies involved. At this rate the animal forage consumption chargeable solely to the bayonet, and which would tax the resources of transportation and encumber the roads, would be over 33,000,000 pounds, or more than 11,000 wagon-loads. If the fighting power of the bayonet is a compensation for all this, it should be retained. On the other hand, if the balance be against it, then the bayonet should be thrown away and its place filled with cartridges.

THE EMPLOYMENT OF DYNAMITE AS A BURSTING CHARGE FOR ARTILLERY PROJECTILES.*

BY ADOLFO CARRASCO.

Among the high explosives, that is to say those which exceeding the ordinary, such as the different war powders, are capable of producing very violent and powerful detonations, we will consider here only those of nitro-glycerine, or the dynamites; detaining ourselves only with the generic dynamite which is that of the inert silicious base, and mentioning, in passing, that of the explosive base called the gum dynamite or explosive gelatine, since the others pertaining to these two classes, as well as those of the active base, are little known or little apposite for application to the problem proposed. And, as the properties of dynamite are derived from those of nitro-glycerine, it is necessary so say a few words about the latter.

Everybody has heard of the dangerous qualities of nitro-glycerine. It is extremely sensitive to shock, a small flask containing it being detonated by falling to the ground—the same occurring on account of a violent jerk—or strong pressure of friction. Although fire causes it to burn tranquilly, if the quantity is considerable, it does not lose its explosive power; it may safely be rapidly heated to 200° or placed in contact with a very lively jet of heat. If it has nitric acid in excess or some has become free, as happens from its exposure to light or humidity, it proceeds to decompose, effecting it successively with increasing velocity until it detonates. Another property very interesting is that of freezing from 12° (Cent.)† downwards.

Dynamite, being nothing more than nitro-glycerine confined in the pores of a completely passive material, it is clear that its properties must be the same as those of nitro-glycerine, with the attenuation consequent upon finding itself divided into isolated particles and upon the action, absorbent of heat and of shocks, exercised by the inert body; thus it is that it may better suffer blows and frictions, and its handling is relatively safe, provided always that it be well-made and conserved and one works with due precaution. But as these requisites, and in particular the two first, are very difficult of realization, it is not prudent to put much confidence in it.

Yet, with the conditions expressed, it detonates by the shock of metal and hard bodies and by every kind of powerful blow, among others that of a musket ball which reaches it with much velocity: being so much the more sensible to these accidents as it is richer in nitro-glycerine and higher in temperature, and above all when enclosed in a resisting receptacle. At the Washington Navy Yard three dynamite shells were fired

* Translated from the *Memorial de Artilleria*, November 1885, by MAJOR GEO. W. MCKEE, U.S.A.

† It freezes at 40° (F.) very nearly. (Trans)

from a gun of eighty millimetres (3.15 in.) and, in spite of their carrying no fuses, they burst on striking the target (although with very little damage to it). In the open air a powerful hammer blow upon a small quantity causes only the portion struck to detonate; but the explosion is general if it takes place in the bottom of a receptacle of whatever capacity.

It resists without alteration a gentle and progressive augmentation of heat. On contact with fire, or through a rapid elevation of temperature to 200° , it only burns tranquilly; but this is in the open air, while in a resisting receptacle it detonates violently, as well as when the quantity of explosive is great.

Below 10° or 12° (Cent.) it freezes, the detonation then becoming difficult. In such a state it hardens and expands because of the crystallization of the nitro-glycerine on congealing, and the latter is able very easily to exude from its original lodgments, and to leave some of itself outside of them when it thaws; neither is this exudation impossible with the extreme heat of our climate. Also it evidences itself often through other causes, as, for instance, the small absorbent power of some of the silicious earths or an extreme dose of nitro-glycerine, without counting a bad execution of the final purification, which has for its object the exterior cleansing of the silicious grains from the nitro-glycerine which moistens them when the dynamite is prepared.

As three kinds of dynamite exist, called No. 1, No. 2 and No. 3, containing 75, 50 and 30 per cent. of nitro-glycerine respectively, it follows that the exudation indicated will probably diminish the measures of these proportions, and the potency of the explosive will be diminished in the same ratio; and, much exactness in it being necessary for the uses of war, we need not go below No. 1. Well, then, from the moment in which there is exudation of nitro-glycerine the latter entirely recovers its characteristic properties. Thus is shown the imprudence of heating dynamite to thaw it, and the high sensitiveness of this explosive in such a disposition; and the like up to the point of its being seen to detonate when a cartridge is cut with a hacked knife, or it is rammed into drill-holes.

Another bad quality of dynamite is based upon the spontaneous alteration of nitro-glycerine by light and humidity, from which results free nitric acid which may exist originally through bad manufacture, as has been said. This phenomenon creates an imminent predisposition to detonate with so much greater facility as the envelop containing it may be more resistant and the developed gases may have less space to dilate in. On this account it is stronger packed than loose, and the keeping of it is dangerous at the temperature of summer if an active ventilation is not established (this again often opposes humidity), and for an equal reason it should be stored in receptacles of little consistency.

Dynamite, even when congealed, is susceptible of being exploded through the influence of other explosives of the same material which manifest themselves at distances more or less great, according to its degree of sensitiveness, being able to explode thus divers cartridges in line, although not indefinitely, since the explosives diminish in intensity as they recede from the initial point.

The absolute density is 1.6 ; the relative 1.5.

We see that dynamite is very delicate ; and if we endeavour to make it less sensitive by the incorporation of camphor or other bodies of like effect, it is at the expense of a great deal of energy ; for which reason it is intended to substitute it (camphor) with other explosives, like the gum-dynamite or explosive gelatine, composed of nitro-glycerine and collodion or compressed gun-cotton.

This other explosive, when it contains four or five per cent. of camphor, needs for detonation an initial shock six times greater than dynamite, properly speaking, and for the same reason it is less liable to be exploded by sympathy ; but in alteration it is more difficult to provoke its action. Congelation does not diminish its energy but increases its sensitiveness, counteracting the good offices of the camphor. It burns in the air without explosion in small quantities ; heated slowly it detonates at a little over 200° ; water does not decompose it ; it does not exude and is of greater effect than the better kind of dynamite. By prolonged exposure to temperatures which approach 40° , it loses its camphor and then detonates on shock ; and, on the contrary, it loses its power of detonation when the camphor reaches 10 per cent. Notwithstanding, it may be on account of uniformity not having been followed in its manufacture, or for other causes, the results of experiments do not appear to have been satisfactory.

These remarks are indispensable preliminaries to the application of dynamite to projectiles as a bursting charge, since in such an act the explosive referred to will have to be very rich in nitro-glycerine ; will be used compactly in receptacles of iron closed with resisting walls ; will be immediately contiguous to fire and submitted to the sympathetic influence of explosions ; exposed to blows and percussions of all kinds ; and subjected to the causes which determine its decomposition. It is true that Industry consumes annually millions of kilogrammes (although not without repeated disastrous results), and that the military art employs it frequently, principally in the engineering branch ; but all these applications are of a tranquil character and permit a method and care which are impossible in that of which we treat.

Its not being desirable for adoption in torpedo use by our navy, or others, serves as a confirmation. For the same reasons which have induced to establish these premises, we will commence now to speculate superficially upon the explosions, considering them under an equal point of view.

It is known that, in order to assure the explosion of dynamite, certain kinds of fulminating primers are necessary—distinguished from the ordinary by being called detonators, and composed generally of a quantity of fulminate of mercury which ought not to be less than half a gramme (7.7 grs.) for dynamite of the first quality, and which should come up to one and a half (23 grs.) when it is frozen ; and this is not simply to unite with the dynamite a proportional weight of unfrozen fulminate. It is from noticing that, when frozen, it detonates badly, greatly in proportion as its contact with the detonator is badly established. Explosive gelatine requires that a certain portion of dry

compressed gun-cotton should be interposed in order that it may act directly upon the gelatine after it (the cotton) has received the action of the fulminate-detonator. And this complication of primer is another of the reasons why this explosive has not prevailed.

According to Berthelot, the explosion takes place through zones in the following manner: The released gases of the first inflamed coating (or of the detonator) precipitate themselves upon the immediate coating, exercising upon it a violent pressure which may be considered a blow, converting its living force into heat which evolves suddenly new gases; these shocking the contiguous coating there is another transformation of living force into heat and a consequent evolution of more gases, or, if you please, explosion, and so on successively. This manner of propagation presents phenomena analogous to those of the Sound Wave, and has received the name of the Explosive Wave.

It is well known that the explosive wave, being in nitro-glycerine, such as has been indicated, will experience in dynamite modifications on account of the interstices and silicious portions interposed, which form a kind of elastic cushion whose influence will vary also with the proportions of nitro-glycerine. The camphor alters the wave because it lends a certain elasticity to the mass and compels the mutual dependence of the particles, and thus the shock is propagated to greater masses and expends itself partially in the work of dislocation.

It is equally conceded that the more violent the first shock the more lively will be the explosion, and that for the same stroke these explosions may be very variable in intensity—the same quantity of dynamite being able to produce very different effects according to the methods of initiating and of realizing the phenomenon. Bearing this in mind, at present we concede explosions of the first and second order, although the dividing point has not been well determined, the last being the stronger,* and those which are needed for the bursting charges of projectiles. And we have seen in fact that, in order to burst a shell when the dynamite is thoroughly detonated by an explosion of the second order, the work will be performed by one half the charge that would be required in an explosion of the first order.

Instantaneous as the detonation may appear, it has been observed that it is far from being indifferent to the point whence it is initiated; if we credit the experiment made with charges of dynamite suspended touching a vertical target of iron plates, they are much more damaged when the detonator is placed near the exterior part, or the point opposite the point of contact with the plates.

The local effect is estimated to be in the inverse ratio of the cube of the distance to the point of explosion; if, at the distance of a centimetre, we estimate its work as 1,000, at ten centimetres it would only be one.

From what has been expressed, it is easy to reflect that, on a par with the probabilities of inopportune and disastrous explosions, there enter into the problem the difficulties of attaining timely detonations of convenient magnitude.

The principal features of the explosions having already been considered,

* The order of explosion seems to be a matter of convention.—TRANS.

it is convenient to know their practical effects relative to the application which we are considering. Commander Folger, in the United States of America, has made several experiments against a target of eleven one-inch plates united solidly to each other and to a strong backing of oak. The charges were contained in bags suspended leaning against the target and with the detonator on the outside part. The first ten detonations, with charges from five to seventy-five pounds of dynamite, caused no change in the target. An experiment with one hundred pounds produced an indent of two inches, greatest depth, and having a diameter of two feet, causing the exterior plate to loosen itself at the extremities and to separate from the one next to it, the contact being preserved perfectly in the others; and, although the mass acquired a movement of translation of two inches, it returned of itself to its primitive position. In the other experiment another plate was arranged horizontally, touching the target with one of its edges, so as to represent a boat and the surface of the water, and a charge of seventy-five pounds of dynamite was placed in the dihedral angle, or water-line. The former impression was deepened an inch more and the edges of the plates were doubled or buckled outwards, but without being loosened or suffering other injuries more than the natural racking would leave in the vicinity of the shock. Also the target was repelled backwards two inches and likewise recovered its original position. One of the sides of the backing, which had several augur-holes corresponding to bolts used in other operations, was broken, the whole unhinging itself a little; but it is to be observed that the target endured resisting a number of explosions which represented 440 pounds of dynamite. The horizontal target was crushed, destroying completely the frame which sustained it.

From these experiments Commander Folger deduces that a modern iron-clad will suffer nothing by an explosion in contact above the water, and little more at the line of flotation or water-line, with charges greater than one hundred pounds of dynamite; and it is clear that it will be much less if the explosion manifests itself after the projectile rebounds and is at some distance from the vessel, as well as when it breaks before detonating, which would be equivalent to an explosion in the open air. A greater result would be obtained in case of penetration; but, even supposing that detonation would not take place from the shock, which is contrary to experience,* we must discuss the explosive force with which the projectile should be endowed.

As a general rule investigators have abandoned penetration, contenting themselves with explosions of contact much less powerful, and all the published experiments agree with the preceding. During the years from 1874 to 1876 some were verified in Sweden, modifying the results of others made before in America† by Capt. Lauer against plates of iron of three inches in thickness without any backing, from which he had deduced the formula :—

* If it is intended to convey the idea that explosion on impact will be so instantaneous as to prevent a decided penetration, even when *uncamphorated* explosive gelatine is used, I think the author is undoubtedly in error.—TRANS.

† Austria?—TRANS.

$$W = d^3 b ;$$

in which W is the charge in pounds of dynamite No. 1, d the thickness of the plate in inches and b its breadth in feet—the explosive being in a cylindrical cartridge of $1.5 \times d$ diameter resting horizontally across the full width of the plate. The Scandinavian Commission employed for the charge cubiform boxes, diminishing thus the extension of contact, and deduced as a conclusion that overplates of five inches they were not able to obtain decisive results with charges less than seventy-seven pounds of dynamite No. 1. They modified the formula, making :

$$W = 3.3 d^2 ;$$

having adopted the co-efficient 3.3 as being the most appropriate for the width it is customary to give shield-plates, and depending on the condition that the thickness of the charge, in a direction normal to the plate, must be not less than once and a half the thickness of the iron.*

According to these principles, for a plate of five inches there results 82 pounds ; for one of ten there are 330 pounds ; and for that of twenty-four, of the Inflexible, 1,900 pounds ; all on the supposition that the detonation is verified above the surface of the water, or very little below it.

Although this formula is empirical and only applicable rigorously within the limits where we find it, various latter experiences, it appears, have caused it to be seen that it is acceptable generally. This being so let us consider what shells, and consequently what guns, it would be necessary to employ when the projectiles of 100 ton guns have capacity for seventy-five pounds only. Notwithstanding, some experiments at Brest are cited in which the effects were more considerable, if indeed not so great as to do away with charges impossible in projectiles commonly used.

With these preliminaries we can now proceed to examine the more notable trials and experiments which have been made with dynamite shells.

Having in mind all the circumstances expressed, and to avoid the initial blow of the ordinary charge of powder, in the United States they have planned, or rather they have wished, to make a practical use of compressed air, from very ancient time adapted to the air-gun, although now relegated to laboratory experiments.

The piece called the compressed-air or pneumatic, and also dynamite, gun is a cylindrical tube of bronze without solder, one quarter of an inch thick, four inches in calibre, and forty feet in length fitted to a frame or stock of steel with trunnions. This species of carriage is mounted in a support gyrating over a foundation pedestal, and in such a manner that it may easily receive any desired inclination. The air is directed from a receiver to the gun by a conductor, which, passing through the axis of one of the trunnions of the carriage, is stopped at the breech where there is an intervening valve, by means of which the fluid may

* See Paper on High Explosions, by Gen. H. L. Abbot, U. S. Engineer, in JOURNAL OF MILITARY SERVICE INSTITUTION, June, 1885.—TRANS.

be introduced into, or cut off from, the bore. The projectile is a cartridge of a thin sheet of copper attached to a wooden spar, which at its posterior base perfectly fits the gun, having between the cartridge and the spar an air space to soften the first impulse. The head of the cartridge is of a soft material which, yielding to the shock, causes the plunger which it carries for this purpose to operate against the primer. The centre of gravity is situated behind that of figure with the intention of avoiding the deviations arising from the lateral wind. After the projectile is inserted the valve is opened to discharge it.

In the first trial, made before Lieut. Zalinski,* the representative of the United States Government, a pressure of 420 pounds per square inch was exercised, obtaining a range of one quarter of a mile. They at once constructed another gun of somewhat greater calibre, capable of supporting 2,000 pounds pressure and carrying 24 pounds of dynamite; but neither has the pressure exceeded 500 pounds, nor has the range been greater than 2,100 yards—the degree of accuracy leaving much to be desired. Notwithstanding, as it is possible indeed to increase the former quantities, it appears that they have under consideration another gun for projectiles of 100 and 125 pounds of explosive. But the same inventor has not thought to replace with his gun the pieces of large calibre, having presented it only as a variety of torpedo-thrower, certain ships being applicable to carry it in their sides. For the rest such an invention neither by its arrangement, manipulation, nor effects can be ranked as artillery, nor can we expect from it shots that which we do from projectiles charged with dynamite, as Lieut. Zalinski has reported to his Government, and therefore it is useless to discuss it further here, what has been said sufficing to justify its exclusion.†

The project of Mr. Jamotte merits little more than to be mentioned.‡ He censures all idea of employing high explosives in projectiles, and proposes for the occasion, in place of these, balls of leather or linen filled with the same materials, throwing them from highly perfected catapults; although retaining their use to the last period of sieges, and without aspiring to the range, accuracy, and effect, which dynamite shells promise, and which in his judgment cannot be realized.

As soon as the explosive power of dynamite began to be known the thought germinated of employing it as a bursting charge for projectiles, since with it they exploded with great violence, producing a much larger number of fragments endowed with a force of projection notably more

* Lieut. Zalinski is not understood to represent the Government in this matter.—TRANS.

† The *Scientific American*, received after this article was composed, says that in a recent trial the pneumatic gun threw one hundred pounds of explosive gelatine two miles. The calibre was eight inches and the length sixty feet.—TRANS.

‡ As dynamite, being no respecter of persons, elevates the just and the unjust, no such inspiration as this of Mr. Jamotte has been presented to military men since the days of the historic John Harolson; and, if nothing untoward happened, we must in all candour admit that it might be as successful as the effort of Professor Moses when he elevated Dr. Corah and his unpleasant crowd in the desert.—TRANS.

great ; but the instability of that explosive has not permitted a free and full entrance into the road of investigation, and the isolated and incomplete studies we know of are impregnated with the timidity which this indomitable agent inspires.

The Committee of Defence, at Paris, in 1870, proclaimed *à priori* the possibility of employing dynamite in shells, and counselled the advantage of doing it, since with an equal volume the effects of dislocation were ten times, and the work of projection three times, greater than with war powder ; but it took care to add guardedly that the dynamite ought not to be very rich in nitro-glycerine, which much reduced the qualities which gave weight to that incorporation. And, in fact, they fired some shells with charges of 200 and 300 (7·5 and 9·5 oz.) grammes of dynamite of fifty per cent. whose effects have been forgotten.

At the same time, in Norway, they fired a few rounds with a Krapp gun of 6·8 inches, testing dynamite projectiles ; but when the charge of gunpowder reached a pound and a half it burst the shell in the bore of the gun, rendering it useless. Before that, in Sweden, they had fired with guns of 18 pounds calibre, using two pounds charge of projection, some shells containing approximately a pound and a half of dynamite. They say that no accident occurred, but neither have the experiments continued nor have they adopted dynamite there for these purposes. In England experiments have also been made without results. In the United States alone they persevere with the hope of success, although not by the ordinary procedure, for there also they have experienced premature explosions and the mutilation of pieces. For that reason they have had recourse to other methods, the one which prevails being that of Mr. Snyder,* in which war powder serves as the propulsive charge, and the features of the projectile are modified to the point of divesting it of its ballistic conditions. The principle could not be more elemental, *viz.*, to avoid the shock of explosion, interpose a body that will mollify or reduce it sufficiently.

Mr. Snyder, after having tried in vain a system of accelerating charges, made use, in 1884, of a Rodman gun† of 16 pounds calibre, with a charge of black powder and an ogival shell. This was supplied with a wooden appendage or tail joined to an elastic obdurate plug resting immediately against the powder. The plug is composed of four disks of wood ; between the posterior or first and the one following it there is a cup of leather with the border repressed over the lateral surface of the first, and the same between the second and third ; and over the third, which is convex in front, another cup appears covered with a cap of sheet copper, with the border or edge doubled, constituting the true obdurator ; and in continuation the last disk is well adjusted to the bore of the gun—the whole being joined together by means of a spindle which traverses them in the direction of the axis.

* Mr. Snyder's devices, so far as they are known, have never "prevailed" to any extent in the United States.—TRANS.

† There is no Rodman gun of this calibre. Mr. Snyder first used a 12-pounder Napoleon gun ; then two obsolete cast-iron 24-pounder siege guns, which he burst ; and latterly a Moffatt howitzer, bored up to six inches.—TRANS.

The tail or spar is a cylinder of wood with some helical flanges like wings, to assure correctness of flight and causing it to gyrate when it strikes the water. Between this piece and the shell is a cylinder of India-rubber, perforated longitudinally in various places, the mouths of the perforations being covered with a metallic lid which embraces the cylinder. This, by its natural elasticity, increased by that of the air contained in the said perforations, contributes to reduce the shock of the explosion. The entire length of the apparatus is 2.75 metres (9 feet), although, for the land service, it appears it may be reduced to less than one metre (3.28 feet); the weight is 6 kilogrammes (13.2 pounds). The charge of the shell was 2.268 kilogrammes (5 pounds) of dynamite (probably of inferior quality), and that of projection 1,700 kilogrammes (1.54 pounds) of black powder. Plate 11 explains this very well. It is said that all accessories which constitute the buffer were separated at 200 yards, were collected intact, and that the projectiles attained a range of three-quarters of a mile on land and ricocheted in the water. The recoil was very little.

In July of the same year, 1884, other trials were made at Sandy Hook by the same procedure. The piece was an 8-inch rifle; the shell carried five and a half pounds of explosive gelatine enclosed in a thick paper case, this case being coated on the exterior, and the shell being coated on the interior with graphite*; there was a cushion of cork in the bottom of the shell beneath the case, and a hollow India-rubber cylinder, closed at both ends, between the powder charge and the projectile. At the first discharge the projectile burst against the target without doing any damage, and, at the second, in the mouth of the piece, mutilating the rifling in this part. No detonator was placed in the shell, and we do not know the charge of projection and the distance to the target.

Let us see now the experiments at Point-Lobos, directed by Col. Kelton, in March of this year. He used a 3-inch wrought-iron rifled gun; shells with 200 grammes (7.5 oz.) of dynamite and a variable charge of projection; since in the first round there was little more than 100 grammes (3.75 oz.); in the second than 225 grammes (8.44 oz.); and in the third than 450 grammes (16.9 oz.) approximately. The target was a large rock at 157 yards distance. In the two first rounds the shell burst into innumerable pieces on striking the rock; but in the third it burst within the piece, dividing it into three parts, one of which was thrown 90 metres (295 feet).

Further on we will see the favourable conclusions which common report has drawn from this trial. General Abbot does not find them so satisfactory.

* The theory was that the angular velocity might elevate the temperature sufficiently to explode the gelatine. Hence a paper case was used, having two diaphragms, crossing each other at right angles within it; and the exterior of the case and the interior of the shell were coated with graphite as a lubricant. There was enough play between the case and the shell to permit the latter to rotate about the former, so that the gelatine would have little if any rotary motion, and the heat, due to the friction, would have to pass entirely through a quarter of an inch of paper before it could act. The paper was of the kind buckets and car-wheels are made of, and was supposed to be the best available non-conductor.—TRANS.

Other trials were made with a piece of 15 centimetres (6 inches), using an explosive charge of 5·4 kilogrammes of gelatine and a maximum charge of prismatic powder for that of projection. The projectile burst on striking the target, destroying it completely and injuring the wall against which it rested. The window-panes of the houses were broken for 300 metres (984 feet) distance. We fail to learn the distance of the target and its strength, which from appearances was not great.

More trials were made during the same month, on the banks of the Potomac, with a piece of the same calibre, the explosive charge being five scant kilogrammes (11 pounds) of gelatine, and the target a large rock at 914 metres (998 yards). The first shell exploded in the target disorganizing the rock for a radius of 9 metres (29·5 feet), and throwing several tons of material to more than 150 metres (492 feet) distance. The second burst on the stony ground in front, producing a crater of 7·5 metres (24·6 feet) in diameter and 1·8 metres (6 feet) in depth, and throwing the fragments for a distance of half a mile. The other two discharges that were made produced similar effects. Besides the quantity of charge of projection, it would be well to know the nature of the rock.*

New experiments were made in May, near Georgetown, with the object of demonstrating the security of firing which the Snyder system offers, to which system all these experiments relate. The results were like the former.

Nordenfeldt asserts that he has obtained 2,000 feet velocity firing explosive gelatine shells from his 6-pounder gun.

Such are the principal performances investigated, although not with all the details which could be desired to know them thoroughly and to be able to reproduce them. Before passing any judgment it will be well to show the impressions and opinions of the experts who have studied them prior to and better than ourselves.

Col. Kelton considered the first experiment at Point-Lobor very satisfactory, where the gun burst at the third round with a charge of one pound of black powder—that of dynamite being seven ounces—since it demonstrated the possibility of employing dynamite in shells, as well as the great strength of this explosive; and he estimates that, for the effective use of these artifices, which, according to him, is to destroy ships, one half the length of the projectile is the penetration needed, requiring 0·001 of a second, and he expects that it will be successful.

General Henry Abbot,† a competent authority on the subject, believes that upon explosions, superficial or in contact, of dynamite and its kindred compounds, we are able to found very small hopes, since it is not possible to cause much effect upon iron-clads, for instance, without previous penetration; and, it being necessary for this to have high

* Limestone, or, rather, Dolomite.—TRANS.

† General Abbot, in his paper published in the JOURNAL OF THE MILITARY SERVICE INSTITUTION, June, 1885, says: "The use of high explosives in shells require no new or expensive outlay, for we must have the guns and shells in any events. It only demands *knowledge*, which may be acquired by judicious experiments at no great cost."—TRANS.

velocities of arrival, projectiles of the best steel, and calibres not under 12 inches, we are very far from realizing this much desired end.

Mr. Jamotte,* the resurrectionist of the catapult, in consequence of judging dynamite shells impracticable, is of opinion that high explosives may be only projected by special processes which eliminate every cause of accidental explosion, it not being worth while to seriously consider them in fire-arms unless said explosives are weak, or loosely packed, in which state they are unsuitable for the object.

Mr. Brialmont takes the ground that if, indeed, charges of dynamite in contact operate efficaciously against earth and stone works, they are not at all formidable against works armed with plate, much less so bursting, as they commonly do, after rebounding; and that the true projectile, until now not summoned for this purpose, is of forged and tempered steel, † impelled with great velocity. He adds that the only positive demonstration of projecting charges of dynamite is that of the pneumatic gun.

The Scientific American, in spite of its affiliation, at present takes the stand that the properties of high explosives will not permit their use in pieces of artillery by the ordinary system of firing, since they occasion the destruction of the guns.

The Army and Navy Journal, speaking of the piece burst at Sandy Hook by a premature explosion, says that the event was entirely in consonance with its predictions anent the subject.

The Army and Navy Gazette maintains that, while dynamite shells have caused considerable destruction against rocks at a short distance, the case of throwing them to a great distance to separate ships, or destroy them if they approach near, requires projectiles with charges of over one hundred pounds; we being only able to expect, from what we have seen, very small operations by means of boats which can approach vessels of war and surprise them.

According to *THE JOURNAL OF THE MILITARY SERVICE INSTITUTION*, although the use of high explosives has not appeared impossible in artillery, it is not to be recommended on account of their sensibility to violent shocks.

A French periodical, *The Yacht*, dedicated exclusively to marine matters, believes that high explosives in shells are impracticable, and that they are not superior to those commonly in use for that purpose, as much by their inefficacy as by their being a permanent source of danger with their premature explosions. It says that the English have made trials and are persuaded that it cannot be employed in war, and that what has been told about it is American exaggeration entirely in the character of mercantile reclamation.

* A good catapult, constructed in accordance with Mr. Jamotte's ideas, would no doubt go far towards solving this problem. And in siege operations it would be unquestionably efficacious to organize a corps of dynatiters, each man being his own catapult, and carrying the necessary appliances in his hat.—TRANS.

† Such projectiles, for this purpose, have already been made in the United States.—TRANS.

After the things presented to view, forming the general picture which precedes, the essential conditions of high explosives, their manner of conducting themselves as such, the experiments to which they have been submitted on the proving ground, and the opinion of intelligent persons and of the Press, the insignificant judgment of the subscriber could be well excused. Nevertheless, we will permit ourselves a few words.

Already we have seen that the same properties, which we talk about utilizing in dynamite, are identical with those which oppose its use, and this opposition is the more accentuated as those qualities are more intense, because, in fact, the potency of the explosive marches parallel with its sensitiveness. And, to overcome this in the piece, up to this date all efforts have been directed, with the desire at the proper time to utilize it to the best advantage against the target.

From this are derived two classes of investigations and experiments—the one directed to the mode of firing, and the other to that of destroying the object upon which we fire. Both things are joined for decisive effects: compounds very active and in great quantities are required against the target, and necessarily the development of such conditions favors the premature detonations of the charges of the projectiles from the effect of the discharge of the gun. On the other hand, as the charge of the gun is greater, by reason of the distance it is necessary to throw the projectile or the velocity we must communicate to it, more efficacious also will be the injurious effects of the discharge cited.

The problem is confined between the two extremes expressed, and, up to date, it has not been solved, nor is there any likelihood that it can be solved while no other road is followed. The experiments we have reported being analyzed, we see that they have not been able to employ explosive charges sufficient for the destruction of ships, nor have they been able to propel projectiles by means of charges of projection adequate to the ranges and velocities which the projectiles demand in order to be useful. We have seen, besides, that the action of high explosives against plates is much inferior to what was imagined, considering its properties, and, if we must give credit to the report of the experiments, the quantity necessary to sensibly injure ships cannot be contained in the projectiles commonly used; and although this would be mended greatly by penetration, there are two difficulties, seemingly insuperable: 1st. The excessive* velocity which must be impressed upon the projectile, the discussion of which we have just finished; 2nd. That, up to date, the dynamite has always exploded on impact, which makes penetration impracticable. This, † apart from the peculiar and natural difficulties attending firing for perforation.

*Señor Carrasco seems to be much impressed with the idea of "excessive velocity." To insure the necessary penetration we must, of course, start with a good initial velocity, and this is what we expect to get from a good modern gun, steel projectiles, and improved modern powders now in use.—TRANS.

† Here he is greatly in error. Penetration will undoubtedly take place in wrought-iron plates when *uncamphorated explosive gelatine* is used. This is a matter of record in the United States when eight-inch shells, with solid cast-iron ogival heads, were fired from a rifled gun with thirty-five and forty pounds of hexagonal

Certainly the perfect realization of the plans which have been traced, with dynamite for a foundation, would be an admirable thing, capable of changing the principles of war, and inferior only to aerial navigation; but, admitting that it may not be impossible, to-day it is found in the period of tentation, and it would be a vain pretension to think of mastering this subject without departing from the beaten road. Only an extraordinary conception, an inspiration of Creative Genius, excited by the obstacles of war or by the stimulus of interest, will give the solution some day when it is least expected.

We could reproduce in Spain the experiments already known and arrive where the others have arrived, having to stop there as they have stopped, which would in no way advance the question. It would be better to open a contest among the officers of the corps, or of the entire army, offering an actual reward to him who might have the ability, or the good luck, to solve the problem.

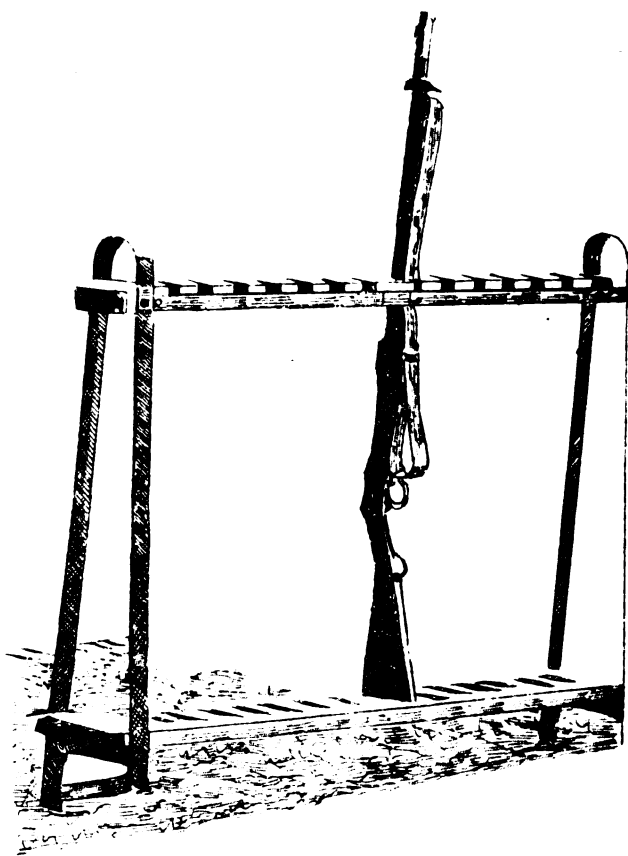
Nevertheless, it would be useful to undertake some experiments which would confirm the most important already made, and demonstrate the possibility or impossibility of success. Dividing the question as it stands into action upon the target and mode of firing, and sub-dividing the first part into effects with penetration and without it, perhaps we would be able to arrive at conclusions of some value.

First, we must determine to commence upon the effects without penetration, or in contact; then, if the explosion is verified always on impact or in the rebound after impact, it is idle to occupy ourselves with penetration. In order to verify the experiments on explosions in contact we could conveniently dispose a target plate, and cause to detonate, suspended against it, free charges of dynamite equivalent to those which the ordinary projectiles carry; and, if any charge cause appreciable damage, repeat the operation, separating it from the target small distances, say from 0.02 to 0.10 metres (0.79 to 3.94 in.) to observe the influence of distance. Afterwards another trial could be made, similarly, with the dynamite enclosed in corresponding projectiles. If the results were *nil*, further effort in this direction could be excused, and there would remain demonstrated the absolute necessity of penetration, it devolving upon us then to acquire the certainty of whether it is or is not attainable. Here now comes the part relative to firing.

The programme would be to fire shells charged with dynamite against the target, increasing the velocity until they burst from the shock, or until they penetrated. If the account of experiments made is true, there would be no necessity of going to this extreme, and the impossibility of penetration would remain proved and, at the same time, that of the application of dynamite to the charge of projectiles; and, in the expectation of this catastrophe, we could make use temporarily of pieces

powder. And the penetration was as great as the gun was in the habit of giving when no bursting charge entered the projectile. The shells were weak at the line where the ogival heads were screwed on, penetration took place up to, or near to, this circle, and that is precisely where they broke. Suppose the gelatine had been *camphorated* to that extent, only to be determined by experiment, which would render it most stable, and the projectiles had been of steel of improved pattern?—TRANS.

of small calibre, which would offer greater facilities. In the contrary case, *viz.*, that of penetration, the entire problem would be solved, since, on obtaining it, we would have overcome all the difficulties concerning the firing. And if, before attaining penetration, or explosion on impact, the guns burst, conformably to what has happened up to date, we must seek for pastures new. It is understood that for the last part of the experiments, where firing is required, it is necessary that we should receive more exact information from the aforesaid Snyder system, and models of the apparatus which this inventor has used in the United States.



NOTICE OF INVENTIONS.

SAFETY ARM-RACK FOR FRONTIER STATIONS.

By Sub-Conductor J. McDERMOTT, *Quarter-Master-General's Department.*

OBJECTIONS have been made to the existing pattern (Oxenden) Arm-rack for frontier stations, on the score of damage caused by the iron bar which is passed through the trigger guards to secure the rifles.

Three new patterns have, therefore, been recently designed and reported on by a Committee.

The pattern approved by the Committee, which is shown in the accompanying sketch, was designed by Sub-Conductor McDermott, clerk in the office of the Quarter-Master-General in India. It can be fixed either on a bracket let into the barrack room wall, or on standards secured to the floor. The rack should be, in either case, about 30 inches from the butt-rest, in order that it may receive the rifles just above the lower band.

For carbines it should be lower, so as to take the carbine between the backsight and lower band.

The weapons are kept in their places by two bars which meet in the centre, and are secured by a lock which is placed in the middle of the rack.

The racks on standards can be removed to standing camps, and be secured to the tent poles with chains.

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GOLD MEDAL ESSAY, 1886.

By LIEUTENANT A. C. YATE, *27th Bombay Light Infantry.*

THE FORMATION OF A RAILWAY SERVICE CORPS FROM THE NORTH-WESTERN RAILWAY.

MOTTO :

"Take time by the forelock."

On the 10th of October, 1884, Colonel (now Major-General) Chapman, R.A., C.B., A.-D.-C., delivered at the United Service Institution of India a lecture on the "Employment of soldiers in civil life after the performance of meritorious military service." This lecture was published in the 61st No. of the Journal of the United Service Institution of India; and in two letters reprinted at the end of that No. occur the following paragraphs :—

"I look forward to the establishment of soldiers, both European and native, who have performed meritorious service (for whatever period may be determined on) in subordinate positions throughout the State Departments under the Government of India, and I anticipate that * * * we shall secure for native officers, non-commissioned officers and soldiers places of trust throughout the State Railways * * * and in many other places where, when the frontier is threatened, and the active army is in the field, they may add to the confidence with which the Government must necessarily leave large tracts of country and long lines of railway unprotected by organised military bodies.

"A suggestion is now being made to allow the second class army reserve of the British army to reside in any portion of the Empire. Such soldiers are pensioners, and native soldiers, after service, would stand on the same footing as the second class army reserve of the European army.

"In considering the question of reserves, it appears to me that the only way in which natives will understand their obligation to bear arms, after they quit the active army, is by the introduction of a regular plan of embodiment for pensioned soldiers who remain in Government service. * * * * An extension of frontier railways may give us a military railway service in which our duffadars and havildars would be station masters, and our native officers compete with staff sergeants of British regiments for appointments in the Traffic Department.*

"If we are content to establish a system of continuous Government employ, and to pass men from the army into the various departments of the State, placing them not only in the very lowest grades but in all positions, we may establish a contented body of Government servants in every province, retaining to some extent the associations of their previous military history, trained to bear arms and distinctly loyal to the State. That such men can be readily embodied, and can be made available for the protection of railways, of public buildings and property in large stations and to relieve the fighting line, will, I think, be accepted.

"If the idea of allowing British soldiers of the second class army reserve to reside in any part of the Empire be accepted, we shall again be able to offer to men, who have selected a military career in India, the chance of honorable employment when they pass to pension and a career in civil life in this country. The certainty that the ability to hold the country, as we have so long done, depends very largely on the presence, in every part of India, of Englishmen in every class, who, whatever their position or employment, recognise that they have an individual responsibility in maintaining the British rule in India, is a matter of history."

It appears to me that the above-quoted remarks by General Chapman contain, with some modifications, the germ of the "formation of a railway service corps from the North-Western Railway." The modifications that I would suggest are that—(1) not only the second class but also the first class army reserve be permitted and encouraged to accept, on the completion of their service with the colours, employment on the Indian State Railways, and in particular on that railway which is so important to the safety of the Indian Empire, the North-Western State Railway; (2) that the employment of native reserve soldiers be carried out in conformity with the proposals for the formation of native army reserves now before the Government of India; and (3) that the officers, non-commissioned officers and men of the North-Western Railway Service Corps should not be civilians but soldiers, and as such in all respects subject to military discipline and law, and, at least, in time of war under the orders of His Excellency the Commander-in-

* I cannot say that my experience of native officers, duffadars and havildars leads me to consider them, as a general rule, fitted for such appointments. They are much better qualified for practical than clerical work.—*Author.*

Chief in India and available for any duty that the exigencies of war may entail on them.

Before entering on a statement of the terms of service of the British soldier, and the alterations now proposed in the conditions of service of the native soldier, and a discussion of how they may be made conducive to the formation of an efficient railway corps for service on or near the North-West Frontier, I think it not out of place to draw attention to the importance now attached to the maintenance in time of peace of organised railway corps by all the great military powers of Europe by giving a brief account of the German, French, Russian and Austrian railway corps, especially as valuable hints may be obtained therefrom for the formation and organisation of the railway service corps on the North-Western Railway.

It appears that, like many of the more recent innovations and improvements in military organisation, the conception, or at least the practical adaptation of the conception, of a military railway corps emanates from the Continental railway service corps.

(1). The German. German or, I should rather say, Prussian War Office. To quote Captain W. A. H. Hare (Royal U. S. I. Journal, No. CXXXII, p. 1186, seq.): "The first formation of military railway troops was made in the war of 1866, when field railway detachments were put together on mobilization for the first time, and formed chiefly of civilian railway servants and artificers and, to a small extent, of men of the Pioneers. After the war of 1866 the military element in these detachments was increased, but technical matters still remained in the hands of civilians, and it was not until the year 1871—that is, after the experiences of the Franco-German struggle—that a permanent military railway corps was formed. By a decree of the 19th May of that year a railway battalion was created at Berlin, consisting of a battalion staff and four companies, with a total peace strength of some 500 men. In December, 1875, an additional battalion was created, and the two formed, with a regimental staff, into a regiment of eight companies." Major J. S. Rothwell, R.A., writes (Royal U. S. I. Journal, No. CXXXIII, p. 325): "It is stated that it is the intention of the German Government to double the strength of the railway troops and form a brigade of two regiments." There is also a Bavarian railway company, strength 6 officers and 159 non-commissioned officers and men, stationed at Ingoldstadt. The peace establishment of the Prussian railway regiment (two battalions) quartered at Berlin is 53 officers and from 993 to 1,001 non-commissioned officers and men. The officers are taken partly from the engineers and partly from the infantry, but only to a very small extent from the latter. The non-commissioned officers and privates are selected from men employed on or connected with railway work, such as guards, engine-drivers, plate-layers, engine-fitters, shunters, pointsmen, &c.

The officers and men of the railway corps wear the uniform of the Pioneers of the Guard with the letter E (Eisenbahn) on the shoulder-strap in yellow (gold for the officers). The men have the same arms

and equipment (shovels, picks, axes, hatchets, &c.) as the Pioneers. The German Pioneers are armed almost exactly like the infantry.

The instruction and training of the railway corps consists of—

- (1). Traffic management in all its branches.
- (2). Construction, repair and demolition of lines.

Under the latter heading is included the construction, repair and demolition of all works connected with railways, such as bridges, tunnels, embankments, stations, permanent ways, rolling stock, signals, tanks, and cisterns, beside the laying, repairing and working of telegraph lines. Detachments of the railway regiment are often employed in the construction and maintenance of lines of railway belonging to the State or Private Companies. The men work under their own officers, and receive extra pay from the railway authorities.

On mobilization the railway battalion is broken up into—

- (1.) Companies of Railway Artificers.
- (2.) Railway Traffic Companies.
- (3.) Companies of Railway Workmen.

The railway regiment would probably furnish at the opening of a campaign 8 Artificer, 4 Traffic and 2 Workmen Companies, being made up to war strength from men of the reserve and Landwehr who had previously served in it. The Bavarian corps would mobilize one Artificer and one Traffic Company. The Artificer Companies take the field with troops of the first line, and, as circumstances require, construct, repair or demolish lines. The Traffic Companies manage the traffic in the immediate vicinity of active operations. The Workmen Companies are employed in the loading and unloading of trains and the storing of goods in railway depôts.

As regards reserve officers, the German Army List of 1885 gives 1 Captain, 17 First Lieutenants and 62 Second Lieutenants, or 80 in all. As regards men, the regiment takes annually 350 recruits, so that in course of time the 12 contingents (the German soldier serves 3 years with the colours, 4 with the reserve and 5 with the Landwehr except the *Einjährige*, or one-year men, who serve only one year with the colours and six with the reserve) will give it some 3,770 reserve and Landwehr men (deducting probable casualties) who will have passed through the regiment. But actually the reserve of the regiment comprises, in addition, all railway employés of every kind belonging to the reserve and Landwehr, no matter in what arm or branch of the service they have served.

The total number of men that would be available for the railway corps in case of war has been estimated at 20,000.

The strength of the several companies on mobilization is as follows :—

- (1) Artificer Company—9 officers, 25 non-commissioned officers and 186 men, with a train detachment of 11 men, 16 horses and 5 wagons for conveyance of tools, appliances and telegraph gear.
- (2) Traffic Company—6 officers, 41 non-commissioned officers and 170 men.

(3) Workman Company—2 officers and 202 non-commissioned officers and men.

A *dépôt* of two companies would also be formed at Berlin, strength 16 officers, 85 non-commissioned officers and 325 men, besides about 100 regimental tradesmen.

As the French, Austrian and Russian railway corps are organised on very much the same system as the German, it is unnecessary to do more than give their strength, arms and equipment and note any distinctive points.

Until July, 1884, the French railway corps consisted of only four companies (peace strength of each, 4 officers and 122

(2). The French. non-commissioned officers and men) or one to each regiment of engineers. Still so alive were the authorities to its insufficiency to fulfil the requirements of a great war that the six great French railway companies were called upon to furnish in case of war eight field sections of railway artificers, workmen, &c. Each section was divided into three divisions for work connected with the traffic, line and rolling stock and engines respectively. Each section numbers 1,165 men, *i.e.*, 459 for traffic duties, 429 for work on the line, and 277 for work connected with engines, rolling stock and *matériel* generally. The *personnel* of these sections were bound to wear a special uniform as soon as the army was concentrated. However this semi-military arrangement was seen to have many defects, not the least of which was that, until mobilization, these sections existed only on paper. In July, 1884, the 20th battalion of French Engineers was converted into a 2nd battalion of railway workmen, and the French railway corps was thus increased to eight companies (peace strength), thus placing France in this respect more on a par with her great military neighbours. At the same time some few years must elapse before France can possess a large reserve of trained railway employés for use in time of war.

Austria has a "Railway and Telegraph Regiment" of—in peace time —two battalions of four companies each. The total

(3). The Austrian. peace strength is 45 officers and 844 non-commissioned officers and men. But in case of war all the men of the reserve and Landwehr who have passed through the regiment, or who, having served in other branches of the army, have been employed as railway officials and servants, are drafted into it, and it is then broken up into the following units:—

(a.) 8 railway companies, total strength 40 officers, 1,784 combatant and 160 non-combatant non-commissioned officers and men.

(b.) 46 field telegraph detachments, total strength 46 officers and 2,802 non-commissioned officers and men.

(c.) The *dépôt* battalion consists of 15 officers and 378 men.

The reserve of officers for this regiment is formed, in the first instance, of officers and one-year volunteers (*Einjährige*) who have passed through the regiment; and, secondly, of officers of other branches

of the service, or of the Landwehr, whose professional attainments fit them for doing duty with the "Railway and Telegraph Regiment." Lists of such officers are kept in the department of the general staff.

The combatant non-commissioned officers and men are armed with the Werndl Carbine, with bayonet and pioneer's sword, and carry respectively 20 and 30 rounds of ammunition apiece. The uniform is that of the Pioneer regiment with a distinctive badge on the collar.

The railway companies and telegraph detachments on a war footing have a field equipment of railway and telegraph tools, appliances and stores complete. The field equipment of the railway companies is kept in store at the head-quarters of the regiment, and in war would be partly carried by the men and partly in wheeled transport, or in railway vans or trucks. The field equipment of the field telegraph detachments is kept, in peace, on specially constructed wagons, that of the mountain telegraph detachments ready for placing on pack animals.

The five battalions of the Russian railway corps are a portion of the engineers. The strength of each battalion is 24 (4). The Russian. officers, 900 combatant non-commissioned officers and men, and about 50 non-combatants. Their arms and equipment are the same as the Russian infantry, and, apart from technical work, they are drilled and trained just like infantry. Each battalion is provided with a complement of engineering tools. It would appear that the duties of a Russian railway battalion are rather those of construction than traffic management. Two of these battalions, if not more, are now engaged on the Trans-Caspian Line. The progress of these Russian railway battalions have a very vital interest for India; and, as the North-Western Railway Service Corps may be regarded as their rival, the following quotation descriptive of their method of and capacity for work is not out of place.

"The *Russki Invalid* gives some interesting particulars concerning the newly-formed 2nd Trans-Caspian Railway Battalion. This battalion commenced work on July 1st, 1885, when three companies were put on the earthworks and one company on the laying of the sleepers and rails, with the exception of such among them as were skilled workmen, blacksmiths, locksmiths, &c., these being assigned to the different workshops so as to increase the *personnel*. At first, on account of the earthworks not being sufficiently prepared, the laying of the line was performed by small parties, as of instruction, but by order of the constructor of the line the numbers were soon increased. The company employed to lay the rails was now housed in railway carriages, in which the officers and attendants also lived, and these carriages formed a train which moved along every day according as the line was laid. Thus on September 10th the road had reached Bami, a distance of 34 miles, and by this time the train contained two companies of the battalion, a still comparatively weak force. When the line reached Archman, 54 miles from Kizil-Arvat, another company was added to the layers, the duty

of this latter company being to prepare the line on ahead with the material brought together by a special transport train consisting of carts, to which horses or camels were harnessed. On November 14th the Geok-Tepe station was opened, and from the 17th of that month the three companies, comprising altogether 450 men, were definitely established in the 'laying train.' By this time it was found possible to augment the means of transport, material being brought by horses procured in Russia. With this force the work advanced at the rate of nearly three miles a day, and the whole distance from Geok-Tepe to Ashkabad (28 miles) was completed between November 17th and 29th, which, after allowing for two holidays, makes an average of almost three miles per diem. This rapid progress of the line on such a broad scale has a tremendous significance in regard to military railways, and has proved that such quick work is possible in war time, too, if the matter be properly organised and on a military footing. At the present moment the line has already reached Dushakh, distant about 241 miles from Kizil-Arvat, and goes straight on to Merv. The 'laying train,' in which the three companies live, consists of 27 two-storeyed carriages, specially arranged for living in, the interior being lined with thick felt for the winter, and provided with stoves, windows, steps and sleeping berths. There are also in these carriages kitchens, dépôts, store rooms, locksmiths' and joiners' shops, a hospital, chancellery and telegraph. The officers likewise live in the train, having a separate carriage for their mess and a private kitchen. In a word, the 'laying train' represents a movable barrack, in which, for now more than half a year, lives in the depths of Asiatic steppes a whole corps, fearlessly and steadily advancing a little every day, and leaving behind it a railroad and telegraph line, which connects solidly and for ever the distance traversed with European Russia. The 2nd Trans-Caspian Battalion has only now (June, 1886) got to lay about 100 miles to reach Merv. The Caspian Sea is already nearly 585 miles distant."

There are certain points in the organisation of Continental railway corps which will be of use in considering the question of the formation of a railway corps from the staff of the North-Western Railway. But at the same time we must bear in mind that the primary object of the Continental and Indian railway corps is not identical. The former would at the commencement of a campaign be occupied in securing the free and uninterrupted passage of troops and *matériel* to the scene of operations. Its subsequent rôle would depend (presuming that the first collision took place on the mutual frontier of the two contending powers) on the good or evil fortune that attended the armies of the nation to which it belonged. If successful, it would have to repair lines partially destroyed by a retreating foe. If unsuccessful, it would have to do all in its power to demolish lines in the face of a victorious enemy. Such at least are the duties of artificer companies. The Traffic and Workmen Companies are at all times, by the nature of their duties, employed in rear

of the scene of operations. The primary object of the railway service corps of the North-Western Railway is the working of the line in all its branches, and the security of such portions of the line as run through tracts of country that are inhabited by turbulent tribes who are as yet more or less unsettled and unreconciled to the rule of the Indian Government. Such for example is the portion of the line from Sibi *via* Harnai and Kach to the Pishin, and such might be the line from Rindli *via* the Bolan to Quetta. The outbreak among the Marri and Pathan tribes, on the former line that ensued on the evacuation by our troops of the Harnai route, consequent on the defeat of Maiwand in July, 1880, is an instance of what might recur at any time in the immediate future. Only so recently as last year a scare broke out among the employés on the Sind-Pishin Line now under construction, and many of them deserted their posts. The formation of a railway service corps from trained soldiers of the reserves, both British and native, may be made conducive to the prevention of the recurrence of any such scares—scares that in the time of war and external danger to India might be disastrous if not fatal. In the event of any attempt on the part of Russia to invade or even threaten India, the occurrence of a panic on the lines of railway that would feed and supply our army of defence would be most inopportune. But while the primary object of the railway corps would be the satisfactory working of the line and its defence from internal danger, it is also quite possible that it might be called upon to furnish railway artificer companies for the rapid construction of a line or lines of railway for strategic purposes, as, for instance, a line from the Pishin or the Khwaja Amran range to Kandahar and Girishk, or from some point on the North-Western Frontier towards Kabul, or across the Beluch desert to the Helmand. As the construction and management of telegraph

lines is also intimately connected with that of
 Telegraph branch railways, and as in modern warfare telegraphic communication is essential to the success of military operations, I hold that a certain proportion of the staff of the North-Western Railway Service Corps should be trained as telegraphists both for working and construction. The Austrian military authorities have deemed railways and telegraphs so inseparable that they have united the two in one corps; and in the German and Russian railway corps telegraphy is not overlooked. Hitherto, whenever war has been carried on out of India, the Director of Telegraphs in India has been called upon to furnish the telegraph staff requisite for the conduct of the intended military operations. Now I am not aware that the strength of the staff under the orders of the Director of Telegraphs is calculated to meet any such demand, and therefore I would suggest that, in view of the extensive military operations that we may at any time be called upon to undertake on the North-West Frontier of India, we should organise from the staff of the North-Western Railway not only a railway but a telegraph corps. To form the latter from the reserves of the

British and native armies is as easy if not easier than to organise the former. The number of British non-commissioned officers and privates employed and trained in the telegraph offices in India is very considerable,* and there is every ground for supposing that with reasonable inducements they would readily accept service in the Telegraph Department of the North-Western Railway. In the event of Russia attempting to invade India, it seems probable that a force of, say, two army corps would be massed on the line Kabul-Ghazni-Kandahar, and it would be advisable, if not imperative, that not only should Kabul and Kandahar be connected by telegraph with Peshawar and Quetta but also that a telegraph line should be laid from Kabul through Ghazni to Kandahar. Although probability points to the Herat-Farah route as the probable line of a Russian advance, it is nevertheless impossible to say where the chief attack would be made. It is important that the British forces at Kandahar (or rather on the Helmand near Girishk) and at Kabul should be able to concentrate rapidly on the threatened point, and nothing can facilitate that so much as telegraphic (combined with railway) communication. Therefore I consider that the railway corps of the North-Western Railway should include an efficient staff of telegraphists, trained both to lay with rapidity and to work a telegraph line. Any one who has seen the telegraph lines laid in Afghanistan during the late war of 1878-80, or the lines worked by the Persian Government, is aware that a systematically dry climate materially facilitates telegraphic construction. Insulators are a superfluous luxury. I have seen lines carried from boulder to boulder, and even in the damp climate south of the Caspian I remarked that broken insulators did not seemingly interfere with the transmission of messages. Consequently the rapid construction of a temporary line of telegraph is an easier matter in the dry climate of Asia than in the more humid one of Europe.

I would also suggest that it would be advantageous to instruct our native cavalry in the construction, repair, Mounted branch and demolition of railways and telegraphs. Cap- of railway corps. tain Hare states that every year the German railway regiment sends a detachment to the School of Cavalry at Hanover to give a course of instruction in such work. But supposing that our cavalry could not be spared for such duties, or even with a view to assisting and co-operating with them, it seems desirable that a portion of the railway corps of the North-Western Railway should

* The following figures have been obtained from the office of the Director-General of Telegraphs in India :—

Number of soldier signallers under training during the first half of the year 1886	...	...	...	274
Number of soldier signallers qualified and granted certificates during the first half of the year 1886...	...	...	...	135

A considerable number of soldier telegraphists are now employed in the Indian Telegraph Department, and the corps of Royal Engineers can furnish a good many more, especially well-educated and able non-commissioned officers.

be equipped and trained as a mounted corps. The details of this equipment and training will be treated more fully further on.

As a guarantee of the necessity for the formation of a trained railway service corps on the North-West Frontier I may quote one or two extracts from the writings of Continental authorities on the subject. Baron von Weber, State Director of the Railways of the Austrian Empire, says: "Nothing can be more advantageous for the effective utilisation of railroad establishments in time of war than the arrangement that their methods of conducting business in time of peace, the system to which they are accustomed, and which is familiar to their *personnel*, should require as little modification as possible in time of war.*"

Colonel Hennebert, in the preface to his work "L'Europe sous les Armées," says: "The great difference in the system of massing large armies now-a-days, and that formerly resorted to, is entirely owing to the use of railways and to the fact that the existence of railways obviates the necessity for the lengthy preparations that were necessary in bygone days before a blow could be struck. Railways enable armies to be rapidly changed from a peace to a war footing, and woe betide the army that is backward in this operation; it may be almost said its fate is sealed. This being a fact beyond dispute, there is again the enormous use of railways in rear of an army in the course of operations, admitting that the army has been enabled to change from a peace to a war footing, concentrate and take the field without a hitch or check. The immense scale on which war can be carried out, and the wants of an army supplied from home or other sources, is again entirely owing to the use of railways, and this is a second fact equally beyond argument." "This work of supplying the wants of a large army in the field requires," says von Goltz in his work 'Das Volk in Waffen,' "endless labour, a perfect knowledge of the work and immense resource. Duties of the kind can only be expected from a disciplined body recruited and organised as a military force and perfectly trained with great care beforehand in peace."

* It may be remarked that the amalgamation of the Sind, Punjab and Delhi, Indus Valley and Punjab Northern Railways with their branch lines under one, i.e., Governmental management, is a step in attaining the desired uniformity in time of peace. It still remains to organise a military railway corps for the management of the Bolan and Sind-Pishin Lines, including perhaps the Ruk-Sibi section. At any rate it seems most necessary that the last-named section should be made a double line rather to enable it to carry on the troops, stores and *matériel* that would be poured in at Ruk, both from Karachi and Lahore, than because the carrying power of the Ghât lines is so very great. It should, however, be borne in mind that a new and easier route for the Quetta Line than that *via* the Bolan has been discovered and, I understand, surveyed. Any line that could avoid the very steep gradient between Dozan and Darwaza would greatly increase the carrying power of the railways that connect or are to connect Sind with the Pishin. It is also desirable that large store sheds and accommodation for the temporary shelter of troops should be prepared at Ruk. When troops are being concentrated and stores collected there both from the north and south there is certain to be delay.

Now although as yet the position of Continental armies to each other in this respect does not find an exact parallel in the altered situation of India as regards foreign powers, India, still it is quite clear that the time is drawing nigh when the British Power in India will be relatively situated towards the Russian Power in Central Asia (and probably also to the French Power in Tonquin) as one Continental nation is to another. Both India and Russia are now busily engaged in pushing forward their railways to the frontiers of Afghanistan, and no one can with certainty foretell when these two railway systems will meet on a common frontier. Foreseeing this we should prepare accordingly, and have a thoroughly organised system of railway service that will enable us to rapidly mobilise and concentrate our forces at the required point, and furthermore supply them throughout the campaign with food, stores, material and reinforcements.*

It is no argument against this that, at the present moment, the forces detailed to defend India can be massed on the line they are intended to hold long before Russia could concentrate her troops to attack them. What is now the case will certainly not be so a few years hence. We have seen the Russian frontier advance since 1880 from the Caspian on the West and Khiva on the North to the Zulfikar Pass, Chaman-i-bid, Maruchak, the frontiers of Maimana and Andkhui, and the neighbourhood of Kilif on the Oxus. In the course of eighteen months more the Trans-Caspian Railway will be carried across the Oxus to Bukhara,† and no one knows when branch lines may be constructed southward along the valleys of the Kushk, Hari-rud or Murghab, if indeed the valley of the Keshef-rud be not

* A few figures from Mr. David Ross' "Military Transport by Indian Railways" will give some idea of what will be required of the North-Western Railway in case of war with Russia. The force placed on the Kabul-Kandahar Line will probably be two army corps, i.e., about 60,000, which is approximately the number of troops serving in Afghanistan and on the communications during the latter part of the war. According to Mr. Ross the gross military traffic booked under Government warrants during the Afghan war of 1878-80 was—

538,364 troops and followers.

114,156 horses, ponies and mules.

15,477 bullocks, 479 guns and artillery and engineers' carriages.

8,645 camels.

148,889 tons of Commissariat, Ordnance and Military stores.

93,099 tons of material for frontier railways.

These required an estimated number of 2,023 trains, 785 of which were special troop, live stock and material trains.

The great number of troops and followers is explained by the fact that each separate despatch is reckoned as a fresh departure. On an average each man has been counted about three times, so that the actual number of men conveyed during the war would be under 200,000.

For some time about 60 trains entered and left Lahore Station daily, and this on single lines of railway. The stores booked under Government warrant were only a small portion of the real amount used by the Afghan force as most of the Commissariat stores were booked by private traders.

† The Trans-Caspian Railway was opened to Merv on 13th July last.

preferred. This being so we cannot prepare too soon to cope with the invader. The frontier of India in fact, as has been repeatedly pointed out of late, will probably ere long march with that of one of the four great Continental military powers, and if she would then be in the same position as a Continental Power, she must adopt the recognised best system for working railways efficiently for purposes of war.

What I have written above is for the purpose of showing (1) the system of military railway service now generally adopted by the four great military powers of Europe; (2) that that system, if not absolutely at the present moment applicable to India, will in all probability be so within a period that may be certainly measured by *lustra*, if not by years; and (3) that India possesses a source from which an efficient railway service corps may be formed. Due weight should also be given to the consideration that any augmentation of the strength of the British forces in India is an additional security to the Empire; and in no direction can such security be more opportunely applied than in the protection from malcontents and rebels of those lines of railway communication, which are one of India's great safeguards alike from external invasion and internal rebellion. The formation of a railway

The late Lord Sandhurst on a railway service corps for India. It has been on the *tapis* certainly since 1864, when Sir William Mansfield,* then Commander-in-Chief of the Bombay army, wrote a minute on the subject. The conditions of service in the British army have been so modified since 1864 that the main objection that presented itself to Sir William Mansfield, *viz.*, the denudation of the army of some of its best men for the benefit of railways, no longer exists. Now, after seven or eight years' service with the colours, the majority of soldiers are drafted into the first class army reserve, and take civil employment wherever they can find it. It is obvious that the employment of the pick of these men in a service so essential to the security of India, and the efficiency of its army as the North-Western railway service corps, is more advantageous to Government than to allow them to take civil employ under private masters. There are, however, several points on which Sir William Mansfield dwells that are as applicable now as then. He in particular directs attention to the fact that soldiers are continually soliciting discharge for the purpose of engaging in railway employ, and that the railway authorities are anxious to secure the services of experienced respectable men fit for railway purposes having a knowledge of the country and good health. It stands to reason that, if soldiers were eager and fit for railway service then, they are equally so now; and the objection that suggested itself then to Sir William Mansfield, *viz.*, that soldiers engaging in railway service forfeited their claim to pension after 21 years' service, need not apply under the present short service system. The following remarks made by him are as applicable now as in 1864:—

* Afterwards Lord Sandhurst.

“ With respect to our military tenure of India, and the highly artificial circumstances in which the small numbers of our countrymen maintain British dominion over 150 millions* of an alien population, a not inconsiderable advantage may be discovered in the fact of having military subordinates in employment on Indian railways. In the case of local or general commotion, the necessity for putting railway stations in a state of defence, and organising the resources of railway companies in aid of the troops, would not fail to show itself. It is evident that, in such circumstances, a great advantage would be found if the railway guards and others of like rank should be all trained to arms, and bound to obey military orders exposing them to danger of life and limb. It would not be possible in the most dangerous times to alienate such servants from their proper duties on the railways, for the latter, besides being wanted for the community, are amongst our most important and formidable resources for the suppression of rebellion and internal tumult. But times will occur when the defence of a station may be matter of prime necessity till aid can come, and when the old habits of the use of arms and of acting under orders for the combination of defence may be of almost immeasurable importance. It seems then, if no other advantages presented themselves to notice in the system I advocate, that the single one shown in the facilities for welding, as it were, the railway system with the means by which the country is held is so important as almost to carry with it the conviction that the system should be adopted in practice.” It will be remarked that Sir William Mansfield regards the employment of soldiers on railways solely as a measure of defence against *internal* disturbances. We must remember that he was writing within six years of the Mutiny, and that in 1864 Russian arms had made but little progress east of the Caspian, while the French occupation of Tonquin and the consequent British annexation of Burma could scarcely have been foreseen. In 1886 the formation of a railway service corps is necessitated even more for the repulsion of external attack than the suppression of internal disturbance. We are now considering the formation of a railway corps for service on the North-West Frontier of India, but it may not be long before we may have to form one for service on the Eastern Frontier.

In 1864 Sir William Mansfield proposed to draw railway employes from the British army and to place them on an unattached list. But he had no other object in view than the better management of the railway service and the security of railways from the results of any internal commotion. In 1886 I propose to form the North-Western railway service corps (a corps that is an important factor in the scheme of defence of our North-West Frontier) from three sources, firstly, the existing European staff of the North-Western Railway, many of whom are already enrolled in the 3rd Punjab Volunteer Rifle Corps; secondly, from the first class reserve of the British army; and, thirdly, from the native army reserve, the formation of which is now

* The census of 1881 gave India a population of 250 millions.

under consideration. Furthermore, there seems no reason why native employes of the North-Western Railway of good physique and belonging to a fighting class should not be enrolled in the ranks of the railway service corps.

At present all soldiers of the British army who have completed their army service and pass into the reserve are obliged to return to and reside in the United Kingdom. Before, therefore, soldiers of the reserve can be enrolled in the railway service corps, the sanction of the Imperial Government to their residing in India must be obtained. There seems no ground for supposing that such sanction would not be accorded.

We will now consider the several classes from which it is proposed to form the railway service corps and the conditions under which they can be enrolled.

Firstly.—The existing staff of the North-Western Railway and the 3rd Punjab Volunteer Rifle Corps. The older

(1.) From the existing staff of the North-Western Railway. European employes of the North-Western Railway are under no stipulation to become volunteers, and we may, therefore, look upon them as, in the main, not available for enrolment in the railway service corps. All the new European employes, one of whose written conditions of service is that they become and remain volunteers, are so available. Most of the present members of the 3rd Punjab Volunteer Rifle Corps would in all probability willingly enter the railway service corps. The present established strength of that corps is 850 of all ranks, with an adjutant for the battalion and one Sergeant-Instructor per company drawn from the regular army.* In this body of men we may consider that we have the nucleus of the North-Western Railway Service Corps, staff included. All its members are already more or less drilled and trained to the use of rifle and bayonet and habituated to military

* The actual strength as per Return of 3rd July, 1886, is—

- 1 Commandant (Lahore).
- 2 Majors (Lahore and Sukkur).
- 1 Adjutant (Lahore).
- 10 Captains (there are 11 companies, but the company on the Multan-Montgomery section is at present without any officer).
- 13 Lieutenants (1 company has 3 Lieutenants, 22 companies have none).
- 1 Sergeant-Major (at Kotri).
- 1 Quarter-Master-Sergeant (at Sukkur).
- 10 Drill Instructors (from line regiments)
- 1 Bugle-Major (at Lahore).
- 11 Color-Sergeants.
- 2 Staff Sergeants.
- 33 Sergeants.
- 84 Corporals.
- 8 Buglers.
- 624 Privates.

Total 741. Number efficient, 685.

discipline, besides being practically trained in the several branches of railway construction and management. In the course of some years the whole of the European staff of the railway would be included in the ranks of the railway service corps. As these employes, however, are under no stipulation to serve beyond the frontiers of India, it would be necessary to invite them individually to consent to serve on any railway work beyond the North-West Frontier which may have to be undertaken in connection with military operations. Reasonable inducements must be held out to them, *viz.*, that they should share in all the privileges attaching to the position of a combatant in the field, including distinctions, rewards, medals, batta, &c., and that they should, while so employed, receive extra rates of pay. These extra rates of pay would be fixed by the Government in communication with the Manager of the North-Western Railway, and as the occasions when this corps would be employed beyond the frontier would be but few, and then only in some very important campaign, it would be well worth the while of Government to offer liberal terms in order to secure the formation of an efficient railway corps in time of peace, when no expenditure would be incurred.

Secondly.—The soldiers of the reserve of the British army. The terms of service of the British soldier are seven years' army and five years' first class reserve service. If a soldier is abroad when his period of seven years' army service expires, he is required to serve an extra year with the colours and only four with the reserve. Therefore every British soldier in India, unless in the meantime his regiment be ordered home, has to serve eight years with the colours. Having proposed that British soldiers of the reserve should be enrolled in the North-Western Railway Service Corps, it is, first of all, incumbent on me to show that they can be spared for such service. Since the year 1880 the net annual increases of the first class army reserve have been as follows :—

1881	...	3,959	men.
1882-83	...	10,504	"
1884	...	4,697	"
1885	...	2,603	"

In the trooping season of 1883-84, 6,254 men were sent home from India to join the reserve. In that of 1884-85 only 3,504 were sent home, this decrease being due to the large number of men who accepted the bounty offered by Government for extension of service with the colours. A similar bounty was offered in 1883-84, but seemingly fewer men availed themselves of it than in 1884-85. Nevertheless, as we see from the figures above quoted, the number of men who joined the reserve in 1884 and 1885 greatly exceeded all the causes of decrease in its numbers in those years. On the 1st January, 1886, the strength of the first class army reserve was 41,889 as compared with 39,286 on 1st January, 1885, and 34,589 on 1st January, 1884, and this increase during 1885 has taken place, notwithstanding that out of 12,624 men who were entitled to pass into the reserve 4,745 elected to extend their service with the colours, so that the

actual contribution to the reserve was only 7,879, and yet despite this and the other ordinary or casual causes of decrease the net increase in 1885 was 2,603. The only argument against the transfer of soldiers of the reserve to the railway service corps is the fact that the first class army reserve is below its established strength. Its establishment, as voted in the army estimates of 1884-85, was on 1st January, 1886, 46,500, *i.e.*, 4,611 were wanting to complete its establishment. The excess in the second class and militia reserve on the same date was 1,478 men, leaving a net deficit of 3,133 men. In 1885, 39,971 recruits were enlisted in the United Kingdom, and the net increase in the strength of the army from all sources during that year was 11,921. Although it seems probable that the general depression of trade and agriculture during that year was a strong incentive to enlistment, still there seems no reason to anticipate that the returns of the Inspector-General of Recruiting will be less satisfactory in the current and following years.* If this prove to be so, then Government will be under no obligation to allow so many men annually to extend their service with the colours, and in that case the first class army reserve will in one or two years at most be raised to its established strength. The number wanting to complete the first class army reserve at the close of 1885 was 4,611, and the number of men who extended their service with the colours in that year 4,745. Therefore, had transfer to the colours been suspended, there would be no deficit. Moreover the number of men annually required for the Indian Railway Service will be but small†; and considering the importance of the service for which they are required, that small number may well be spared from the reserve.

It has been already stated that in 1883-84, 6,254 men and in 1884-85 3,504 joined the reserves from India alone, when the strength of the British force in India was probably under 60,000. For the current year (1886) the establishment of the British garrison in India is 69,862 (exclusive of officers), and of the garrison of the United Kingdom and Colonies 142,194. Consequently the former is as nearly as possible half of the latter, and its contribution to the reserve should be one-third of the whole. In 1885 the contribution to the reserve from the whole army was 7,879 (showing a net increase of 2,603 although 4,611 men were wanting to complete its established strength). Therefore the contribution due from the British garrison in India

* In July the following forecast of the recruiting for the current year was published :—

Recruiting for the army is going on very briskly, and among a superior class of men on the whole. It is anticipated that forty thousand men, the full number required, will be obtained. The proportion of educated recruits is steadily increasing, many gentlemen having enlisted.

† It is worth remarking that the present disability of Eurasians to serve in the British army may at any time be removed, and in that case there is no doubt that the Eurasians who enlist will, on the completion of their colour service and transfer to the reserve, have to reside in India. Many of them will be only too glad to be enrolled in a railway service corps. This is, therefore, another possible recruiting field for it.

would be $7,870 \div \frac{1}{4} = 2,626$. But even in the year 1884-85, when the number of men drafted from India to the reserve, *viz*, 3,504, was unusually small, it was nevertheless 878 in excess of the requirements of an ordinary year. Now once the railway service corps is started, and recruited up to its established strength, nothing like 878 British soldiers will be required annually to fill up the gaps in its ranks.* There is yet another point that merits attention in connection with this question, and that is that there seems good reason to believe that at least a considerable proportion of the British soldiers transferred from the reserve to the railway service corps might be men with some previous railway training and experience. In support of this statement I will quote the figures of a Return furnished from the British forces serving in the Bengal Presidency in 1878. From that Return it appears that there were then serving in the British garrison of that Presidency the following number of men who had previously served in various capacities as railway employes:—

Guards	...	...	...	135
Engine-drivers	...	...	...	94
Shunters	...	...	...	116
Firemen	...	...	...	439
Cleaners and Stokers	...	...	...	263
Platelayers	...	...	...	357
Fitters	...	...	...	144
Artisans	...	...	...	74
Mechanics	...	...	...	189
Foremen	...	...	...	13
Signalman	...	...	...	1
Total				1,825

If in 1878 there were among the British troops in the Bengal Presidency alone 1,825 former railway employes, it is obviously probable that in 1886 there would be from one-third to one-half as many more in the garrisons of all three Presidencies. In 1885, as a result of the imminence of war with Russia during the early part of that year, the following increase of the British garrison in India was sanctioned:—

				Strength.
1	Battery Royal Horse Artillery	...	...	157
2	Batteries Field Artillery	...	...	314
2	Ditto Mountain Artillery	...	...	212
6	Ditto Garrison Artillery	...	...	690
9	Squadrons Cavalry (one to each regiment of Cavalry in India)	...	...	1,332
3	Battalions of Infantry, each 984 of all ranks, exclusive of commissioned officers	...	...	2,952
100	Privates to each of the 50 Infantry Regiments serving in India	...	...	5,000
Total (exclusive of officers)				10,657

* According to the estimate given in the Appendix (List 1) the strength of European warrant and non-commissioned officers and privates in each battalion of the railway service corps is 165, *i.e.*, 495 for the whole corps. At a rough estimate 50 recruits per annum would suffice to maintain the corps at this strength, exclusive of the existing officials on the North-Western Railway.

This augmentation will be completed in the coming trooping season (1886-87). At the present moment the established strength of the British troops in Bengal is 42,600, and in Madras and Bombay combined 27,262. There seems very little reason to doubt that, with the requisite sanction of the Imperial Government, the European portion of the railway service corps could be recruited up to and maintained at its required strength from the ranks of the British garrison in India, and that, too, in the main, from men who had previously been railway employés in the United Kingdom. It may be not unreasonably surmised that men who had descended from the position of responsible railway employés to that of privates in the army must have shown themselves morally or mentally unfitted for the duties expected of them. Be this, however, as it may, the test that must be relied on is their conduct while serving with the colours for seven years, as reported by their commanding officers, and the experience of their character and fitness for railway employment gained during their period of probation, of which more hereafter.

Having thus demonstrated that the reserve of the British army is able to furnish and spare the number of men required to form and maintain at the established strength the European complement of the North-Western Railway Service Corps, it remains to consider what inducements and advantages are offered by service in it.

The following may be mentioned: (1) The superiority of pay in India to pay in England; (2) the certainty of permanent employment under Government and ultimately a pension, whereas soldiers of the reserve find great difficulty in obtaining civil employment in the United Kingdom, because employers object to engaging men who are liable to be called out for service in any national emergency; (3) the hope of attaining to high and lucrative appointments in railway employ, coupled with promotion to the warrant or commissioned grades. Such promotion should be open to those who are well educated and show themselves worthy of being entrusted with the duties of responsible posts. It is the reward to which non-commissioned officers of the unattached list employed in the several departments of the Government service look forward; and just as the officers of the 3rd Punjab Volunteer Rifle Corps are now selected from the higher railway employés so the officers of the North-Western Railway Service Corps should, with the exception of the military staff, be drawn from the higher European employés of the railway, such as managers, assistant managers, traffic and locomotive superintendents and assistant superintendents, executive and assistant engineers, superintendents and assistant superintendents of telegraphs, examiners of railway accounts, &c.

In the interests of the British army I consider that no soldier should be allowed to volunteer for or be transferred to the railway service corps until he has completed seven years' service with the colours. Army service is quite short enough as it is. Nor does it seem practicable that soldiers should receive a railway training while still serving with

regiments. No adequate training is possible except by detaching annually a party from each battalion, regiment or battery to the nearest or most convenient railway depôts and workshops, much as parties are now detached for transport training. It will be generally admitted that more than enough men are already detached from British regiments for a variety of purposes. A soldier with capacity, as an artisan, can to some extent find the means in the workshops of his own regiment of acquiring or practising the trade that he knows or desires to know. Furthermore the very *raison d'être* of the railway service corps requires that every member of it should be a trained soldier, consequently the seven years' previous military training and discipline is, as it were, the essential foundation upon which the other qualifications of the corps will be built up. For training in the duties of railway construction, traffic and administration no short period of absence from military duty will suffice, and the knowledge and experience gained in one course of training must be kept up by successive annual courses. The man's efficiency as a soldier would be undeniably impaired by these renewed terms of absence from his soldierly duties and training, and the now-more-than-ever imperative necessity for the thorough efficiency of the British garrison in India demands that nothing tending to subvert it should be countenanced. We may then look upon any scheme of extra-regimental railway training as not to be recommended, and facilities for intra-regimental railway training there seem at present to be none. Consequently the railway training of the recruit of the North-Western Railway Service Corps should begin at the close of his seven years' service with the colours. He will then probably be from 25 to 27 years of age, an age when a man, whose mind and habits have been disciplined by military service, can very well acquire the duties of a new profession, even if he had no experience of them prior to his enlistment in the army. The education of the orderly room, the offices of the adjutant, paymaster and quarter-master, and the regimental workshops is calculated to qualify a man for railway employ, either as station master, clerk or guard, or as an artisan and mechanic. With a view to ascertaining if a candidate for railway employ is fitted for it by character and attainments, he should be required to pass through a period of probation varying from six months to one year, according to the qualifications required by the branch of the Railway Department in which he seeks employment. This period of probation should be during the eighth year of a soldier's service with the colours in India. To take examples of the different classes of probationers—

A non-commissioned officer in a regiment, a man able to read and write well and a fair accountant, would aspire to employment as clerk, guard, station master, engine-driver, foreman, telegraphist, or some other well-paid and responsible berth, while the private soldier, especially if uneducated, would have to be content with being employed either as an artisan in the railway workshops or in some inferior capacity in which it might be deemed expedient to employ Europeans further than natives. It is obvious that the first-named class of

appointments requires higher attainments than the second, and consequently a longer period of probation, in order that the character and ability of the individual may be thoroughly tested prior to his permanent engagement. A class of men whom it would be desirable to induce to accept railway employ at the close of their military service are the non-commissioned officers of the Royal Engineers serving with the Sappers and Miners or in other capacities in India. It is true that they all or nearly all put in twenty-one years' army service; but at its close they might give, and be glad to give, to the railway service corps from 10 to 15 years' service. Their wide experience of construction of works of every kind, of engineering, telegraphy, and visual signalling, and their long military training would be most valuable. The prospect of good pay and of promotion to the warrant and commissioned grades should suffice to induce at least a portion of them to join it. With the exception of non-commissioned officers and men of the Royal Engineers, whose every-day training specially fits them for railway employ, I consider that no soldier of more than seven years' army service should be allowed to enter the railway service corps.

Conditions of service. We will now pass to the conditions by which service in the railway corps should be regulated.

First and foremost it should be clearly laid down that soldiers **Permanency of service.** (European and native) transferred to the railway service corps are not liable to be called out for any military duty except that connected with their railway duties. It is obvious that the corps cannot possibly be denuded of its members in time of war, the very time when its services are most urgently needed. It should be further laid down that soldiers, either British or native, being transferred from the reserve to the railway service corps, should forfeit, as long as they remain in it, any claim to pension, gratuity or any Government allowance (except perhaps the special monthly allowance of from Rs. 3 to 4 which it is proposed to pay to sepoys of the native army reserve); but in the event of their having to leave the railway corps through no fault of their own, and not attaining railway service pension, they should then receive any pension, gratuity or allowance to which their military service entitled them. With regard to length of service in the corps, that may be regulated by the results of general experience. Europeans who lead a life of exposure and hard physical toil in India can hardly be expected to stand the strain beyond the age of 40 or 45, whereas those whose occupations do not involve such exposure should be able to do good work in India up to the age of from 50 to 55. Thus engine-drivers, stokers, platelayers, all who lead a life of unusual exposure, would not improbably be past their work at 45, while station masters, guards, clerks, signalmen, artisans and mechanics, &c., would continue to serve till 50 or 55.

Length of service. The question of the period of service qualifying for pension should be regulated by the above considerations. In the British army two years' service in the reserve counts as one year's service towards pension. Such a rule could not be made applicable to the railway service corps, in that each year's

service should count in full towards pension in addition to the seven years' previous army service. Twenty-one years of combined army and railway service should be the minimum period qualifying for pension for the lower grades of the railway service, such as signalmen, artisans, engine-drivers, mates of workmen gangs, &c. For the higher grades, including station masters, clerks, guards, telegraphists, and all whose duties are rather mental than physical, the minimum period qualifying for pension might be fixed at 25 years' combined army and railway service, with increased rates of pension after completing 30 or 35 years of such service. The lower grades, if after 21 years' service they are considered still physically fit, should be allowed to serve on for increased rates of pension after 25 and 30 years' combined army and railway service. Thirty years' service should be the limit for the lower and 35 years for the higher grades. The rate of pension would depend upon the grade or appointment of the individual, provided he had served not less than three years permanently in that grade or appointment.*

If a man breaks down from no fault of his own before having completed the minimum period for pension, he should receive on retirement a gratuity proportionate to his length of service and status in the railway corps. With regard to non-commissioned officers of the Royal Engineers who might enter the railway corps after completing 21 years' army service and so have become entitled to a military pension, they should be allowed to serve four, nine or fourteen years in the railway corps, and then retire on the 25, 30 or 35 years' railway pension of their grade or appointment, at the same time forfeiting their military pension unless that happened to be better than the railway pension to which they might be entitled. If, however, they broke down before completing four years' service in the railway corps, they should retire on their ordinary military pension *plus* a small gratuity proportionate to their status and length of service in the corps. It may be considered unjust that non-commissioned officers of Royal Engineers after being four, nine or fourteen years in the railway corps should obtain the pensions that others earn after 25, 30 or 35 years' service. It should be remembered, however, that the North-Western Railway Service Corps will, if organised, be in Government employ, and if Government thinks fit to allow army service to qualify for railway pensions, there is no injustice in the case at all.

If a soldier should be under the necessity of resigning his situation in the railway corps from no fault of his own, as, for instance, from ill-health resulting from residence in India, he should be allowed, if not physically unfit, to revert to the army reserve at home, or, if physically unfit, he should receive his discharge with gratuity. If removed from the railway corps for misconduct, the nature of the charge made

* For the officers of the corps there must be special pension rules; and as promotion to the grade of officer would be open to the subordinate grades, pension rules providing for this contingency must be framed.

against him should be considered in deciding whether he should be sent back to the army reserve at home or be discharged without gratuity.

The next point to be considered is furlough. During a service

Furlough and leave. ranging over a period of from 14 to 28 years (exclusive of seven years' army service) furlough to Europeans is necessary. The British soldier, who, after seven years' service with the colours and one year's railway probation, is transferred to the railway service corps, should certainly be allowed a year's furlough to Europe after he has completed four years' railway service. Twelve years at a stretch in India is as much as can be reasonably expected of any European. After his first furlough, nine months after each spell of five years' service in India should suffice. Free passage to and fro by troopship or ordinary steamer should be provided by Government both for furlough and sick leave. The above applies to the lower grades. Respecting the higher grades, they should be allowed one year's furlough after five years' service, and a free passage to and fro should be allowed to all drawing less than a certain rate of railway pay.

One month's short leave should be allowed annually to all Europeans serving in the railway corps, provided the exigencies of the service permit it.

It has been suggested that a certain proportion of the Europeans in the corps should be drafted into a sort of reserve (as is the case in the German Railway Corps, service in which is regulated by the same rules as it is in the rest of the German army), and allowed to reside in England, subject to the condition of being obliged to rejoin at once if their services are needed. Such a system, I am convinced, would not answer. The men should be on the spot, ready at a moment's notice when they are needed. The army of a great Continental Power, such as Germany, can be mobilised and concentrated in a fortnight, but from five to six weeks must elapse before men could be summoned from England, even by telegraph, and reach their several posts on the North-Western Frontier of India. When the frontiers of India and Russia march, as they presumably will do in due course of time, the railway service corps must be ready for prompt action.

We will now pass on to the native section of the North-Western Railway Service Corps. Just as the European section is recruited from the reserve of the British army so it is proposed to recruit the native section from the reserves of the native army in India. The proposals for the formation of a native army reserve have not yet received the sanction of the Government of India, but they must be accepted, in the form in which they have been put forward by the military authorities, as the only basis we have to go upon in treating of the formation of the native section of the railway service corps. As one of the most essential features of that corps is that it should be composed of good fighting material, trained to the use of arms and disciplined, we may at once dismiss the idea of drafting into it, except

in a few cases, that class of men in the native army from which writers are drawn. In fact we want no *Babus* in it. This being so it may be laid down as a general rule that the natives enrolled in it will not be eligible for employment in the highest grades requiring advanced education. Good practical men of the commissioned and non-commissioned grades we may get, capable of leading and controlling the men under their charge, and good artisans, mechanics and workmen, but not men deeply versed in the three R's. The railway employment for which, it appears to me, the soldiers of the native army reserve should be specially adapted is as railway police and *chaukidars* (watchmen on the line), and it is difficult to see for what railway duty the ordinary native officer would be fitted except that of inspector and sub-inspector of police. In the military organisation of the railway service corps the native officers would of course rank as *subadars* or *jemadars*, and as the inspectors and sub-inspectors of police have not the status and privileges of commissioned officers, it would be well to let them continue to bear the one title of *subadar* or *jemadar* both in the execution of their military and police functions. I have seen it proposed that the natives serving in the railway service corps should be entertained under the usual agreements entered into with camp followers. Such proposal I regard as radically subversive of, and derogatory, to the character and object of the corps. It is impossible to look upon a corps, formed from the reserves of the British and native armies, as other than an essentially military body. If these men had remained with the reserves they would be soldiers, and when they are transferred to a corps intended to manage a line of railway in the immediate vicinity of the scene of warlike operations, and also to defend it towards the rear against disaffected and marauding tribes, how can they be regarded as other than soldiers pure and simple? Continental railway corps are part of the regular army of each Power. For purposes of discipline and military instruction, and in time of war, this corps should be under the Commander-in-Chief in India, although in time of peace and for all railway purposes it would obey the orders of the Management of the North-Western Railway. It can be no longer classed as volunteers or militia, but as a regular military corps, and as such should be borne on the strength of the Indian army, especially as in time of war all extra expenditure on its account would be charged to the Military Department. The fighting qualities of the ordinary native railway employé are undeserving of the smallest confidence, and they are consequently unfit for employment on the frontier sections, such as the Bolan and Sind-Pishin Lines, of the North-Western Railway. The proposed formation of native army reserves affords an opportunity of obtaining the very stamp of man that is required for service on those sections. The salient features of the proposals for the formation of this reserve are the following: (1). That there shall be two reserve forces, an active reserve of all arms and a garrison reserve of infantry. (2). That the active reserve be formed of men under twelve years' service who, after not less than five years' service with the colours, may be transferred to the reserve, its numbers being limited to 75 of all ranks for a cavalry regiment, 218 of all ranks

Proposed rules for formation of native army reserve.

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for an infantry regiment (in Madras and Bombay infantry regiments the strength of the active reserve is fixed at 160 of all ranks), and 25 per cent on established strength in the corps of Sappers and Miners and in batteries of artillery. (3). That the garrison reserve be formed of infantry soldiers having from 20 to 30 years' service with the colours, or of men of the active reserve of infantry who have completed a total colour and reserve service of not less than 21 years. The garrison reserve is unlimited in number, and is not liable for service beyond the frontier of British India. (4). Men of the reserve become entitled to pension on completing a total colour and reserve service of 25 years. If discharged as unfit before completing 25 years' service, they will be entitled to certain gratuities.

In framing regulations for the employment of soldiers of the native reserve forces in the North-Western Railway Service Corps, the above rules must be taken as a guide. We see that a man must serve five years with the colours, and assuredly no one desirous of obtaining a well-drilled, trained and disciplined soldier would wish to curtail that period of qualifying colour service. Nor should he have more than twelve years' service (it is obvious that men of the garrison reserve would be quite unfitted for employ in the railway service corps), because when a man gets beyond a certain age he is less able to adapt himself to new duties. The transition from military to police duties is not great; but it is proposed, if feasible, to employ a good many of the natives serving in the railway corps on railway duties that demand both practice and experience.

The native soldiers enrolled in the railway service corps should continue to be borne on the rolls of the native army reserve, but, like soldiers of the British army reserve, they should be engaged for permanent service in that corps. Only if they fail in health, or if they prove themselves unfitted for the railway service, should they be remanded to the active or garrison reserve. In view of the possibility of their being thus remanded the names of all men of the native army reserve drafted to the railway service corps should be borne on the reserve rolls of their respective regiments, but, as it were, on an unattached list—like the British

Period of probation. soldier, so the native soldier, who is a candidate for the railway service corps, should be on probation for a period ranging from six to twelve months according to the nature of the duties likely to be allotted to him. For instance native commissioned and non-commissioned officers and educated men of the rank and file who wish to be enrolled as artisans, mechanics, clerks, assistant station masters, telegraphists, inspectors, sub-inspectors and non-commissioned officers of police, or other responsible posts, may remain on probation for one year. For railway police, chaukidars, permanent-way mates and gangmen, pointsmen, &c., six months' probation is sufficient. During this period of probation their conduct and qualifications, both as railway employes and soldiers, will be put to the test. It may be perhaps thought that native soldiers will be unwilling to exchange

military service for such work as that of permanent-way gangmen, mates of gangs, pointsmen, &c. I think, however, it will be a mere question of pay. At the present moment as much as 8 annas a day (Rs. 15 a month) is being paid to labourers on the Sind-Pishin Line. A sepoy gets Rs. 7 a month *plus* from 1 to 3 rupees good conduct pay, and a trifling allowance for grain compensation. If he can exchange this for Rs. 15 or even less a month as a railway labourer, with the certainty of attaining a Government pension later on (I will deal with pensions hereafter), I do not think he will find railway employ distasteful. The labourers now employed on the Sind-Pishin Line have no pension to look forward to. Perhaps the most difficult question

Native officers. is to find suitable employ in the railway corps for native officers. In the rules for the formation of a native army reserve no provision is made for them. They are, however, necessary to the organisation of the railway service corps. At the same time it is neither incumbent nor perhaps advisable to select the native officers of that corps from the native officers of the Indian army. Most of the latter are illiterate, often lacking in energy and too old to adapt themselves to a new profession. Commanding officers would certainly decline to part with comparatively young, active and intelligent native officers, and no others would be of much use. I would, therefore, recommend that native non-commissioned officers of less than twelve years' service, who would be likely to give the corps the benefit of their service for fifteen years or more, should be selected from the native army reserve as probationers for the railway corps, to be promoted to jemadars on satisfactorily completing their year of probation. In the first instance it would probably be necessary to enrol some few native officers of standing and experience as subadars in command of the native sections of the corps, but after that the promotion should go in the ranks of the corps itself by selection. It seems scarcely probable that native officers of long service would, even if fitted for railway employ, find it worth their while to accept it, knowing that a good pension, ensuring them ease and affluence, awaits them within a few years. The present native officers could be only utilised, in addition to his military duties, as an officer of railway police. With the encouragement and extension of education in native regiments we may hope to obtain for the railway service corps native officers, non-commissioned officers and men possessed of other than mere physical and fighting qualities. There are those who imagine that the education of the native soldier would detract from his fighting powers. I rather fancy that the British officer of the present day with his more advanced education (competitive examination, garrison classes and examinations for promotion) considers himself as good a fighting man as his less scientific predecessor. Why then should the fighting classes of India deteriorate by being educated?

It remains to say a few words about the pensions and leave of the native soldiers serving in the railway corps. We have seen that they must enter the native reserve after between five and twelve years' service, or approximately

between the ages of 23 and 32, and I have expressed an opinion that no one over twelve years' service should be eligible for the railway service. Under ordinary circumstances the sepoy becomes entitled to pension, under the new reserve rules, after 25 years' combined colour and reserve service. I think that 20 years' combined regimental and railway service should be the minimum qualifying for pension. At present fifteen years' army service is the minimum qualifying the sepoy for pension ; we may take the medium between that and the 25 years above mentioned. Whether the native soldier of the reserve should or should not draw his reserve pay (from 3 to 4 rupees a month according to rank), in addition to his railway pay, is a question that only Government can decide. I myself should be disposed to say that as his duties are twofold, military and railway, and as he may at any time be remanded, owing to indifferent health or other causes, to the active or garrison reserve, he ought to receive both reserve and railway pay. The latter may be proportionately reduced. In case of a man failing to complete 20 years' combined colour and railway service, and being unfit for either reserve, he should, if discharged for no fault, be given a gratuity proportionate to his grade and length of service. The above rules should hold good for all native ranks. If native soldiers of the railway corps are desirous of extending their service, and are pronounced medically fit, they should be allowed to re-engage and serve for an increased rate of pension on completing 30 years' combined colour and railway service. I consider it beyond my sphere to propose rates of pensions for every grade in the railway service. Leave should be granted to native employés in the railway corps on the terms on which it is now granted to all native soldiers.

Although I have advocated the formation of the railway service corps mainly from the reserves of the British and native army, I by no means desire to exclude all others from the corps. I have already said that the existing 3rd Punjab Volunteer Rifles should be its nucleus, and that young native railway employés of good physique and likely to make good soldiers should be admitted to it. The railway service corps should be employed chiefly on the frontier sections of the North-Western Railway. The completion of the Sind-Pishin Railway (it is said that it will be finished next year) will necessitate a large increase in the North-Western Railway establishment. Of course soldiers from the reserves would require training before they could be sent for duty on the frontier sections. Their place would have to be taken at first by existing railway employés, but as they became efficient they should be sent for duty to the Bolan, Sind-Pishin or other frontier lines.

Having treated of the method of recruiting the corps, I will now pass on to consider its approximate strength, its discipline, drill, dress, equipment, arms and other material points. I do not propose to deal with the question of pay and pension, excepting the few suggestions I have already made, as those are subjects the details of which only the Railway and Military Accounts Departments can decide. The question of pay is treated of in detail in Appendix 2 of the Report of the Railway Service Corps Committee assembled in 1878.

In order to estimate the number of men requisite for the working and defence of the frontier sections of the North-Western Railway, I have selected as a unit the establishment required for working 100 miles of single line. We will suppose that this section of 100 miles is worked in two subdivisions of 50 miles each, that there is a terminal station at each end, and an engine-changing station in the middle* ; also that, these being the three principal stations on that section, the greater portion of the Engineering, Traffic and Locomotive Departments is concentrated at those three stations, and the Manager and Staff are located at one of the terminal stations. I find that there is considerable divergence of opinion as to the strength of establishment required to work 100 miles of single line. I conclude that this divergence is due to the fact that some estimates are framed for working the line under ordinary circumstances and others for working it under heavy pressure, as in time of war. It will be best to endeavour to adopt a medium estimate. It is generally admitted that motives of economy have led to the too general employment of natives on Indian railways to the exclusion of Europeans. It has been pointed out by Lord Sandhurst, General Chapman, and others, that the more extensive employment of Europeans on Indian railways tends to promote the security of British rule in India. We may further add that it is conducive to the protection of the Indian Empire from external invasion, especially on the frontier railways. I have already pointed out that we cannot expect to find among the men of the native army reserve, from whose ranks I propose in part to recruit the railway service corps, men of advanced education. The Babu is obviously out of place where fighting qualities are requisite. For all posts, therefore, that require such education and military training combined we must look to Europeans and Eurasians. Many of the latter are already employed on the North-Western Railway and enrolled in its volunteer corps. In future in using the word European I wish to be understood to include under that term both Europeans and Eurasians.

The frontier lines of railway with which we are now more particularly concerned are the Sind-Pishin Line from Sibi to Shebo, and the Bolan Line from Rindli to Quetta. Anyhow they may be selected *exempli gratia*. The aggregate length of these lines may be roughly estimated at 300 miles or, in other words, three units, each of 100 miles of single line. Consequently the railway service corps for the working of this 300 miles of line might be organised as a regiment of three battalions, one battalion for each unit. The re-organisation of the native army in regiments of three battalions each has more than once been proposed. The battalions of the German railway corps are in time of war broken up into (as translated in English) Construction, Management and Working Companies. I have before remarked that the conditions affecting a railway service corps in India, at present at least, differ somewhat from those affecting a Continental

* The average distance between engine stations is stated by another authority to be 100 miles, but on ghât lines the distances are no doubt less. For instance, on the Bolan Line there must be engine stations at each extremity of the steep gradient from Dozan to Darwaza, as well as at the terminal stations.

railway corps. In fact in the former the special duties of a Construction Company are of less immediate importance than those of the Management and Working Companies. The establishment of an Indian railway is divided into three chief departments, the Engineering or Maintenance, the Locomotive and the Traffic, to which we must add the General Department (in which I include the Accounts and Store Branches and the Railway Police) and the Telegraph Branch. I therefore suggest that each of the three battalions be subdivided into four companies to be known as—

- No. 1. Direction and Telegraph Company.
- „ 2. Engineering or Maintenance Company.
- „ 3. Locomotive Company.
- „ 4. Traffic Company.

It is not intended or necessary that these companies should be by any means of equal strength.* Their strength must be regulated by

* Appendix Q of the Railway Service Corps Committee Report of 1878 estimates the strength of all grades of the several departments for 100 miles of line as under :—

Engineering Department	...	...	382
Locomotive	„	...	320
Traffic	„	including signallers	180
General Department and Medical Staff	...	...	113
Total			995

Menials and inferior servants are deducted from the above estimate.

For purposes of comparison I quote here the war strengths of the three classes of railway service companies in the German army—

	Construction or Artificer.	Management or Traffic.	Workmen.
Captain	1	1	...
1st Lieutenant	2	1	1
2nd Lieutenants	6	4	1
Assistant Surgeon	1	...	...
Paymaster	1	...	...
Sergeant-Majors	2	2	3
Sergeants	6	12	3
Non-Commissioned Officers	17	27	9
Lance-Corporals and Privates	175	159	186
Train Soldiers	11	6	2
Hospital Assistants	1	...	...
	223	212	205

It will be noticed that the proportion of the officers and non-commissioned officers to the privates, especially in the Construction and Management Companies, is very large. This is due doubtless to the fact that the nature of the duties of those companies creates a large number of responsible posts which can only be filled by officers and non-commissioned officers. A German Railway Management (Traffic) Company is considered to be sufficient to manage from 45 to 60 kilometres (28 to 37 miles) of line. The officers of an artificer company are told off for duties as follows : 1 Captain as Chief Engineer, 2 First and 4 Second Lieutenants as Line Engineers, 1 Second Lieutenant as Mechanical Engineer and 1 Second Lieutenant as Telegraph Engineer. The duties of a Traffic Company are thus allotted : The Captain and 1st Lieutenant are respectively superintendent and assistant superintendent, and the 4 Second Lieutenants are station masters. Of the 40 non-commissioned officers

that of the departments they represent and by the demands that may be made on them in time of war. In this latter case, *i.e.*, in the event of war, the two companies that may be called upon to furnish contingents for service with the army front line will be Nos. 1 and 2. Later on, when the line is partially or wholly completed, Nos. 3 and 4 will have to furnish contingents for working it. It may be necessary to construct rapid extensions of railway and telegraph, and such work will of course fall on the telegraph section of No. 1 Company and on the Engineering or Maintenance Company. Of each of these companies (Nos. 1 and 2) we shall have in all on the Bolan and Sind-Pishin Lines three, and in time of war a Railway and Telegraph Construction Company for service with the front line should be formed of contingents from each of them. This company should be looked upon as a *corps d'élite*, and receive extra rates of pay.

Having these facts in view, it stands to reason that the strength of Nos. 1 and 2 Companies should be sufficient for military training. to be able to spare these contingents and yet efficiently work the railway and telegraph sections under their charge. This must be borne in mind in framing an estimate of their required strength. It should further be borne in mind that for purposes of drill and musketry instruction certain portions of the corps must be successively struck off all railway duty. The establishment must therefore be able to dispense temporarily with the services of the portion struck off for drill and musketry, and yet work the line efficiently. It may perhaps be argued that the subdivision of the battalion into the four companies above named is not a suitable one because the component parts of each company will be scattered far and wide over the hundred-mile section to which they belong. But I maintain that this is not of the slightest consequence. The military training for all companies will be the same, being nothing more than the ordinary training of an infantry

(excluding 1 Sergeant-Major) 1 is Traffic Manager, 4 are assistant station masters, 12 engine-drivers, 7 guards, 7 baggage guards, 3 line inspectors and 6 telegraph clerks. Of the 20 lance-corporals, 3 are guards, 1 foreman of telegraphs, 2 foremen of platelayers, 12 firemen, and 2 in charge of stationary engines. Of the 139 privates, 4 are shunters, 18 pointsmen, 14 platelayers, 7 engine-fitters, 4 greasers, 2 engine-cleaners, 55 porters, &c., and 35 brakemen.

The Workmen Companies are employed as porters and labourers in loading and unloading trains with warlike and other stores, and as store-keepers and storemen at stations, &c.

The above details are obtained from articles by Major Rothwell and Captain Hare in Nos. CXXXII and CXXXIII of the Journal of the Royal United Service Institution.

It will be observed that the composition and duties of the Direction, Locomotive, Engineering and Traffic Departments of Indian railways by no means correspond with those of the Management (Traffic), Artificers and Workmen Companies of the German army, and that consequently no exact comparison can be instituted between the two, nor can the organisation of our Indian railway service corps be conveniently assimilated in points of detail to that of the German.

corps.* It is plain that the railway establishment at each station, whether the individual belongs to Company No. 1, 2, 3 or 4, must be drilled and trained together, so that they may learn to act in unison as one body, and that every officer, non-commissioned officer and man may know his place and duty. Thus, while every member of the corps is on a distinct footing as a railway official, the military duties and training of one and all are the same.

One of the most difficult points to arrange satisfactorily is the carrying out of the railway and regimental promotions on a compatible system. There are obvious objections to placing a railway superior under the orders of his railway inferior regimentally, and yet on the other hand the efficiency of the corps demands selection. After all the difficulties in a railway service corps on this score will not be greater than similar ones in the army in general. The principle should, from the first, be laid down that railway and regimental promotion are independent the one of the other. At the same time the union of the two will tend to smooth the working of the corps.

However, in regulating regimental promotion in the railway service corps, we should recollect that a thorough knowledge of railway duties is the first essential, and that military capacity and soldierly qualities, although very important and, as before stated, indispensable, should be allowed to carry somewhat less weight, because, under ordinary circumstances, these qualities would be but rarely put to the test. After all the railway corps is intended to fight only in cases of exceptional emergency. In cases where it is deemed inadvisable to give a railway official regimental promotion, warrant or honorary rank not carrying with it any substantive regimental appointment might be accorded instead.

There is one other point to be considered, and that is the organisation† of a body of mounted railway engineers from the ranks of the railway service corps. This company should, as I think, be composed of men drawn from the Railway and Telegraph Construction Company, which I suggested above should be formed of contingents from Nos. 1 and 2 Companies of each battalion of the railway service corps. In fact it should be a section of the Construction Company, working in ordinary times like every other portion or unit of that company, but ready to move at the shortest notice rapidly to any point where its

* Their railway duties they will learn by daily practice. At the same time I would recommend that the Railway and Telegraph Construction Company should be exercised in the work of rapidly constructing, repairing and demolishing lines of railway and telegraph. For this purpose a section of it should be annually struck off all duty, as for military instruction.

† I have already drawn attention to the fact that the German cavalry are specially trained to railway-demolition. I am not aware that our Indian cavalry are so trained. Therefore I recommend that the railway service corps furnish its own mounted branch for this purpose, whether for the rapid demolition or repair of its own or an alien line, railway or telegraph.

labour would either facilitate the movements and action of its own army or retard those of the enemy. In the event of sudden attack it could easily effect a safe retreat from any other arm than cavalry or mounted infantry, and even in the face of the latter it should, unless greatly outnumbered, be able to effect a masterly retreat. Only the neglect to post vedettes properly would give the enemy an opportunity of surprising and capturing them while at work. Besides, a body of cavalry would, no doubt, if possible, be sent out to cover it from attack while working. I believe that supported by cavalry it might raid with effect on the railway communications of a hostile army with its base. Some remarks on its dress, arms and equipment will be given hereafter.

As the formation of a railway service corps has for one of its main objects the protection of the station and line from the effects of any internal disturbance, *i.e.*, the rebellious or marauding propensities of our own Indian subjects, we are naturally led to consider whether or not the stations and most assailable points on the line (such as bridges, tunnels, cuttings, etc.) should be fortified. The elaboration of any such system of defence I look upon as the duty of the Royal Engineers, and I consider it beyond my sphere and the sphere of this essay to do more than allude to it. An elaborated scheme for "The defence of Railways in India" will be found in Vol. II, No. 7, of the Journal of the United Service Institution of India, pages 55—64. The one point in the scheme therein contained which now concerns us is the fact that the writer considers the railway volunteers as the only source of defence to the Indian railway, and calculates that a military force, 3,240 strong, would be required, in addition to the volunteers, to defend the East Indian Railway alone. He roughly estimates that three men per mile are requisite for the defence of any line of railway. Now the aggregate strength of the permanent-way gangs on any line of railway in India is on an average three men per mile. Consequently, if the calculations of the writer above quoted are correct or approximately so, the railway service corps composed entirely of trained soldiers, European and native, would amply suffice for the defence of the line against any ordinary internal disturbance. A competent authority on railway administration roughly estimates at the present time the railway establishment for working 100 miles of single line at 533 of all grades, and the Railway Service Corps Committee of 1878 puts the figure at (including the medical staff but exclusive of menials) 995.* The first estimate gives an average of $5\frac{1}{2}$ men per mile, and the second of nearly 10. Other estimates for high pressure work are, I understand, even higher. In the estimate I have appended to this essay I have endeavoured to strike a medium, always allowing for the demands of the Railway and Telegraph Construction Company and the mounted

* In a lapse of eight years the working of a line may have been simplified.

engineers in time of war and the detachments struck off duty for military instruction in time of peace.

I have already stated my opinion that the corps should be placed on the footing of a regiment of the regular army

because it is proposed to form it mainly from men who have served in the army, because it is impossible to regard it as a volunteer or militia corps, the enrolment of natives of India in volunteer corps not being permitted, and, finally, because the four greatest Continental military powers have set us the example of raising railway service corps as an essential component of their regular army. Being regulars the corps must be under the orders of the Commander-in-Chief in India in all matters of training and discipline in time of peace, and absolutely in time of war, and all ranks of it must be subject to military law like any other corps of the regular army. The Europeans would be under the Army Discipline Act, and the natives under the Indian Articles of War. The officers of the corps would sit on courts-martial like other officers of the regular forces. The commanding officer of each battalion should be empowered to hold a summary court-martial on any native in his battalion. It may be reasonably hoped that the European and native soldiers of the reserve drafted into this corps, being men who have served a number of years with the colours and left their regiments with good characters from their commanding officers, and who have furthermore passed creditably through a period of probation extending from six months to one year, will but rarely commit offences against military discipline. Should any man, however, prove inamenable to discipline, and so be continuously taken away from his railway duties to undergo confinement or other punishment, it is recommended that he should, without hesitation, be remanded to the reserve to which he belongs, provided he is not guilty of any very serious offence.

Under the system proposed of forming the railway corps of reserve men most of its members should

enter it as thoroughly trained soldiers. Drill with them means not the tedious course of a recruit, but the practice which the drilled soldier requires to maintain his efficiency. The drill of the battalion will of course be carried out under the orders of the commanding officer and the direct supervision of the company officers and non-commissioned officers, the adjutant and the drill instructors. The latter will each have a company located on a particular section of the line and should, under the orders of the adjutant and company officers, continually travel up and down it for the purpose of superintending the exercise of the detachments at each station in musketry, parade and field exercises, and inspecting their arms, accoutrement, equipment, &c. At all stations, large and small, parades for drill and musketry instruction should be taken at such times and as often as the commanding officer may order by the senior officer or non-commissioned officer present.

It will probably be sufficient to strike off each man for one month in the year for drill* and musketry instruction. With regard to the Railway and Telegraph Construction Company, and its mounted section, they would have to go through additional courses of instruction in the duties of the branches to which they belong, i.e., in construction, repair and demolition of railway lines, and in manœuvring as mounted infantry both for purposes of offence and defence. As the mounted section must necessarily move completely equipped with the tools and material requisite for the work that may be allotted to them, they should in particular be exercised in the rapid packing and unpacking of those tools and material. What these should be will be stated under the heading of equipment. As the Construction Company has more arduous drills, and is composed presumably of picked men, and in time of war may have to undertake enterprises of considerable danger, they should in peace time receive a higher rate of pay than the men of the other companies. No increase of pay would be necessary in time of war, except of course the allowance of batta, if it be granted to the other troops. The men of the mounted section should receive horse allowance.

The German railway regiment and the Austrian railway and Arms, dress and equip- telegraph regiment are, in point of arms, ment. dress and equipment, closely allied to the Pioneer regiments. The North-Western Railway Service Corps would require no other arms than the rifle in use with infantry (soon to be the Martini-Enfield) and the sword-bayonet. The mounted engineers should have carbines. On service our Indian infantry carry 70 rounds; but 40 rounds per man should be sufficient for the soldier of the railway corps, except in special cases. The non-commissioned officers and men of the Austrian corps carry only 20 and 30 rounds respectively. For ordinary every-day uniform, whether for European or native, nothing can be better than a khaki blouse with pockets, loose, easy pegtops and canvas gaiters *minus* pipeclay. The European will wear the helmet and the native the puggaree (khaki) with some suitable badge. Clothing must of course be regulated by climate, and as the mountainous district lying between the Pishin and the plain of Upper Sind, varying in elevation from

* The period for this month's training must depend on the locality. It must obviously be between 1st November and 1st March or 1st April for the detachments on the lower part of the line, while those at the higher elevations should be exercised between 1st March and 1st November. As rifle ranges cannot be constructed at more than a few stations, which would naturally be the largest ones, i.e., regimental or battalion head-quarters, it would be best to assemble the detachments at out-stations at the head-quarters' stations of the battalions for their month's training. For musketry practice they could be railed up from time to time, a special day being allotted to each detachment.

a few hundred to 6,000 or 7,000 feet above the sea level, has been selected as the locale of the railway service corps, very great variations of climate and temperature must be provided for. The heat of Sibi and Rindli is, if not absolutely unequalled, at least not exceeded by that of any part of the globe, and the great cold of Darwaza, Quetta, Kach and other elevated spots in winter is well known. Even in the midst of the hot season the sudden change from the heat of Bibinani and Mach to the chilliness of the night at Darwaza is found to be decidedly trying and often productive of fever. This being so, care should be taken that the hot and cold weather clothing of the corps should be suited to the needs of the climate. White clothing in the hot weather will of course be permitted to the Europeans. At such places as Darwaza and Kach warm clothing should always be worn between sunset and sunrise.

On the shoulder cord the letter R might be worn just as the Transport, Medical and Commissariat Departments wear respectively T, M and C. While on probation men should continue to wear the uniform of the corps in which they had previously served, if they possess such uniform. As yet no definite decision seems to have been arrived at on the subject of the best type of boot for the native soldier. As far as my own experience goes, native soldiers will march very well in an English ammunition boot, which, if of good quality, has the advantage of outlasting several pairs of Indian-made boots and shoes. In some regiments the preference is given to the English boot even by native officers and soldiers themselves. On the other hand the natural *chaussure* of the native is the country-made shoe, and it is not surprising that he should prefer that to which he is accustomed. Such a shoe however cannot be worn with a gaiter, and affords no protection to the foot and ankle against thorns, speargrass, &c. In a corps composed of Europeans and natives, both with a view to general utility and uniformity, the English ankle boot should be adopted.

In a book entitled "From Sidanto to Sarbruck" published in 1870 by an officer of the R. A. we read (p. 159):—

"The boots worn on the march (by the Prussian cavalry) are either the Napoleon boot, evidently a favourite and most serviceable article, or the ordinary Wellington, slit up the back seam, and made to fasten by leather loops and buttons. Thus converted, it can be taken off and put on again with the greatest ease (the trousers, made narrow at the bottom, being tucked neatly inside the boot), no matter how thoroughly soaked with rain.

This ingenious device appears well worthy of imitation, more especially as it is equally applicable to infantry, some of whom we saw on the march thus shod." Such a boot, dispensing with the use of the gaiter, might with advantage be tried in India. It seems at any rate just the boot for mounted infantry and the proposed mounted section of the Construction Company, in which what is practical should alone be aimed at.

The equipment of a railway service corps is a question that cannot be dealt with in detail here. I will content myself with referring to the Equipment Tables of the Public Works Department and the Equipment Tables of the Royal Engineers and Sappers and Miners in India. In these elaborate lists of engineering and telegraph equipment and the standard method of loading them on mules will be found. The equipment of the Continental railway corps is much the same as that of Pioneer regiments, and I therefore conclude that the equipment of a Construction Company of an Indian railway corps will not be unlike that of a native Pioneer corps. The following Table gives the "list of stores forming the equipment of a Pioneer regiment to be taken on service, specifying each mule load" :—

No. of mules.	Crowbars.	Jumpers.	Axes, pick.	Mamooties.	Handles, spare.	Spoons, miners'.	Hammers, sledge.	Wedges, miners'.	Axes, felling 4½ lb.	Powder barrels of 100 lbs.	Fuse, barrels.	Tool chests.	REMARKS.
1	6	...	...	...	...	4	...	...	...	...	...	...
2	6	...	...	...	...	4	...	...	...	...	...	...
3	6	...	...	...	...	4	...	...	...	...	...	...
4	6	...	...	...	...	4	...	...	...	...	...	...
5	6	...	...	...	...	4	...	...	...	...	...	...
6	...	8	...	...	...	4	...	...	...	...	...	...
7	4	2	...	...	10	4	...	...	...	...	...	...
8	6	...	...	...	10	...	...	...	...	...	...	...
9	...	8	...	...	10	...	...	...	...	...	...	...
10	...	10	...	...	...	...	...	...	...	...	...	...
11	...	4	20	...	...	...	...	...	...	...	...	...
12	...	4	10	5	...	...	...	...	...	...	...	...
13	...	4	10	5	...	...	...	...	...	...	...	...
14	...	...	30	5	...	...	...	...	...	...	...	...
15	...	...	30	5	...	...	...	...	...	...	...	...
16	...	...	...	20	40	...	...	...	...	...	...	...
17	...	...	...	...	30	...	10	...	...	...	...	...
18	...	...	...	...	90	...	...	...	...	...	...	...
19	...	...	...	...	50	8	...	...	10	...	...	...
20	...	...	...	...	...	...	...	...	...	2	...	...
21	...	...	...	...	...	...	...	...	...	2	...	...
22	...	...	...	...	...	...	...	...	...	...	2	...	
23	...	...	20	20	4	...	...	8	...	...	...	...
24	...	...	...	...	...	...	...	...	...	...	...	2	Containing carpenter's tools, assorted.
25	...	...	...	...	...	...	...	...	...	...	...	2	Containing blacksmith's tools, assorted.
Total	40	40	100	60	260	40	10	8	10	4	2	4	

In the German army every Pioneer company has the following portable tool equipment :—
 German Pioneer equipment. Carried by the men in leather cases : 88 large shovels, 44 picks, 45 axes and 17 hatchets. Carried in the company tool wagon : 60 large shovels, 80 picks, 20 axes, 12 saws, 6 crowbars, &c.

For service in Afghanistan the equipment of a Construction Company should be specially devised for loading on pack transport (mules or ponies), although where the roads are sufficiently good cart carriage may be utilised. Wherever rails are laid equipment trains would, of course, take the place of both pack and draught transport.

The telegraph section of the Construction Company, while in no way differing from the rest of the corps as far as Construction Section military training, arms and dress (for R. on the shoulder cord R. T. or TEL. might be substituted) are concerned, must necessarily have a special organisation, telegraph-construction-training and equipment. As some guide to a calculation of the required strength and composition of the section, I will quote the following figures which have been kindly furnished me by the Director-General of Telegraphs in India :—

I. Telegraph officials of all grades employed from Rindli (*via* Bolan) to Quetta and from Sibi (*via* Harnai) to Quetta.

- * 1 Assistant Superintendent.
- 1 Inspecting Telegraph Master.
- 1 Inspecting Signaller.
- 1 Clerk, Superintendent's Office.
- 1 „ Quetta Subdivision.
- 8 Telegraph Masters.
- †29 Signallers (of whom 12 are military).
- 2 Battery men.
- 2 Sub-Inspectors.
- 11 Line riders.
- 2 Line men.
- ‡3 Peons.

II. Strength and composition of telegraph party for constructing and working a temporary line 100 miles long in Afghanistan, with offices 10 miles apart.

- 1 Superintendent.
- 1 Assistant Superintendent.
- 1 Sub-Assistant Superintendent.
- § 20 Military Signallers (*i.e.*, 2 men per office for 10 offices).
- 4 Sub-Inspectors } for construction and maintenance.
- 12 Line men }

* Till recently a superintendent was also employed.

† On 300 miles of railway about 70 signallers would be required, stations being 10 miles apart, and allowing for extra hands at large stations.—*Author*.

‡ Also 20 menials.

§ These should be 22, there being 11 offices including terminal offices.—*Author*.

10 Line men for interruption duty, *i.e.*, 1 at each office.

30 Labourers (local labour should be procurable).

Taking these figures as a guide, a Telegraph Construction section should consist of—

2 Officers (Superintendent and Assistant Superintendent).

5 European non-commissioned officers (Sub-Assistant Superintendent and 4 Sub-Inspectors).

22 European or native soldiers * (signallers).

22 Native soldiers (line men).

If deemed advisable the 30 labourers might also be native soldiers. Their duties would be such as Pioneers and Sappers have to perform. The strength of an Austrian field telegraph detachment is 1 officer and from 64 to 67 non-commissioned officers and men.

If we add Lists Nos. I and II together *plus* 41 extra signallers and 2 peons we shall have approximately the establishment requisite for working the railway telegraph and for providing in time of war a detachment for field telegraph construction.

Officers.

† 1 Superintendent of Telegraphs.

2 Assistant Superintendents.

European Warrant and Non-Commissioned Officers.

1 Sub-Assistant Superintendent.

† 1 Inspecting Telegraph Master.

† 1 Inspecting Signaller.

† 1 Clerk, Superintendent's Office.

1 Clerk, Branch Office.

8 Telegraph Masters.

6 Sub-Inspectors.

European and Native Soldiers.

90 Signallers (45 European and 45 native soldiers).

2 Battery men (European).

40 Line men and line riders and peons (native).

To the above list should, I think, be added 1 assistant and 2 sub-assistant superintendents and 2 branch clerks (so as to give one of each to each battalion of the railway corps), 2 telegraph masters and 2 sub-inspectors.

It may be found advisable to enrol to a limited extent in the telegraph section of the railway corps telegraph employes on all parts of the North-Western Railway. In the event of the Telegraph Construction section being detached for field service, the employes so enrolled can be sent to do duty on the frontier sections of the railway.

* One European and one native at each office.

† Those marked thus will be at the corps head-quarters.

Under the present system, when a telegraph detachment drawn from the staff under the orders of the Director-General of Telegraphs in India is sent with an army in the field, the members of it receive extra rates of pay, ranging from 17½ to 50 per cent., on the ordinary pay of their appointment.* Soldier signallers draw rations or Rs. 2 a day in lieu of rations and 12 annas a day telegraph pay, plus 8 annas a day extra, if in charge of an office. Warm clothing is also supplied. Similar special allowances should be made to the telegraph sections of the railway service corps. The corps consisting of three battalions, there would be three such sections, viz., one in No. 1 Company of each battalion. The telegraph section of the Railway and Telegraph Construction Company for field service would be formed of officers, non-commissioned officers and men selected from those three sections.

The material for the construction of the telegraph line and the equipments of the offices will be conveyed on pack or draught transport as may be most convenient and suited to the nature of the roads and country. Telegraph material and equipments. As a telegraph line is constructed in as straight a line as possible, more or less, irrespective of roads, pack transport is the best. Of what the material and equipment consists, and how it should be packed and loaded, full information can be obtained from the Equipment Tables of the Telegraph Department and Sappers and Miners.

The work for which the mounted section of the Construction Company is best fitted is demolition both of railway and telegraph lines, whether those of the enemy or its own army. 100 of all ranks is a sufficient strength, of which half should be Europeans and half natives. They should be picked men of strong physique, good riders, and accustomed to tend horses. Men who had served in British or native cavalry regiments would be the best adapted for the work. The weakest point of mounted infantry is the riding and management of the animals on which they are mounted. What does an ordinary infantry soldier know, as a rule, of a horse? The result for the animal is sore back and bad condition. This therefore must, if possible, be obviated; and for that reason I suggest that only men who have either served in the cavalry or are quite at home with a horse and on a horse should be enrolled in the proposed mounted section. They may at times, as for instance in making a raid on the enemy's railway communications, have to ride very long distances, and they must therefore understand how to husband the strength of their steeds. (a) Men who cannot ride necessarily cause their horses extra fatigue, and moreover themselves become so sore and stiff after a long journey as to be unfit for any hard work.

Of the 100 men 88 should be of the Railway and 12 of the Telegraph Construction Branch. They should be mounted on strong ponies from

* These rates of extra pay are also allowed to all telegraph officials now serving beyond Sibi.

18-2 to 14 hands high, and armed with Martini-Henry Carbines. The best method of carrying the carbine for mounted troops is a subject of much difference of opinion. If slung on the back it very soon wears a hole in the man's uniform, and if carried in a bucket attached to the saddle any accident separating the rider from his horse robs the former of his only weapon. Captain H. S. Massey, of the 19th Bengal Lancers, has invented a new carbine sling, which seems likely to prove a success. It is about to be tried in the 19th Bengal Lancers. It appears well-suited for use in the mounted branch of the railway corps. The dress, accoutrements, &c., very recently recommended for the mounted infantry in Upper Burma by Major General White, V.C., C.B., are as under :—

- 1 Pair Cord Pantaloon.
- 1 Drab Serge Coat.
- 1 Great Coat.
- 1 Pouch for 20 rounds ammunition.
- 1 Bandolier for 50 " "
- 1 Knife and Lanyard.
- 1 Light Hunting Saddle with wallets and baggage straps, bridle, headropes, &c, complete.

In cold weather each man must carry on his own pony two blankets for himself and a jhool or blanket for the horse. He should carry a sword-bayonet both for purposes of offence or defence and for use in camp, as for cutting wood, &c., &c. Each man must carry the tool or tools requisite for his railway or telegraph work (see list above of Pioneer equipment) affixed to some part of the saddle, and some men must carry powder and fuses properly packed. The saddles, which could be turned out at the Cawnpore Factory, should have special arrangements for adjusting each kind of tool and for the powder and fuses. It is obviously out of the question for a mounted body that must move rapidly to be hampered with baggage animals laden with tools and explosive charges. Dynamite or gun cotton might also be carried for destroying rails, &c. The proposed composition of the mounted section will be found in the Appendix.

I do not consider that any hard-and-fast rule can be laid down as to the proportion of Europeans to natives that should be adhered to in the organisation of the corps. Europeans and natives must be employed in those posts for which they appear individually best fitted. At the same time I would recommend that, as far as financial considerations will admit, Europeans should be employed in the corps in every possible post. I further think it would be desirable to allow all employés (Europeans and efficient volunteers at least) on any State Railway in India to volunteer for service in the North-Western railway service corps, and in the event of a serious war breaking out he should be at once transferred to the North-Western Railway for duty. There seems some doubt about employing soldiers of the native

reserve as porters and labourers on the railway. The question of course is whether or not native soldiers would accept such employ.

In the Continental railway corps the porters and labourers are all necessarily Europeans.

If the railway corps consists of 3 battalions of 4 companies each, including the Railway and Telegraph Construction Company with its mounted section, I would suggest that the following military staff should be attached to it :—

Military staff.

- 1 Colonel of Royal Engineers as commandant, having concern only with the military training of the corps and railway and telegraph construction and complete control over it at time of and for the purposes of war..
- 1 Captain of Royal Engineers, as staff officer, to remain at the head-quarters of the corps and to assist the commandant in supervising its railway instruction, specially that of the Railway and Telegraph Construction Company.
- 3 Sergeants of Royal Engineers attached to each battalion for a similar purpose.
- 1 Infantry Captain as staff officer at the head-quarters of the corps to assist the Commandant in its drill and musketry training.
- 3 Infantry Lieutenants, as Adjutants of battalions, for do.
- 4 Drill Instructors and Staff Sergeants per battalion for do.
- 1 Surgeon-Major at corps head-quarters.
- 3 Surgeons in charge of the three battalions.
- 2 Sergeants, Staff Clerks, at head-quarters.
- 3 Sergeants, Battalion Clerks.

The other officers of the corps would be taken from the railway service. The existing staff of the North-Western Railway numbers two, if not more, officers of the Royal Engineers, and the officers of the 3rd P. V. R. C. know something of military duties.

As far as can be seen at present, the best site for the head-quarters of the railway service corps will be either at Quetta or at some central point in the Pishin.

The point of junction of the Bolan and Sind-Pishin Lines, when they are joined, would be the best place for the head-quarters, firstly, as being central, and, secondly, because so important a point must necessarily be strongly garrisoned, and the constant association of the corps with other regular troops would tend to increase and maintain its military spirit and efficiency. The corps should be annually inspected by the General Officer Commanding the district.

A regular corps, organised as I propose the railway service corps should be, must necessarily have barracks, and store-rooms for arms, ammunition, accoutrements, clothing, and railway and telegraph equipment.

The chief store-rooms would of course be at the head-quarters of

the corps and the battalions; but at each station, large or small, there must be some place, unless every man kept his own, where the arms, accoutrements and ammunition of the employés at that station could be kept. It is scarcely practicable that the men could be spared from their railway duties to go on guard. At large stations the requisite guards could be furnished by a native infantry regiment, while for the security of the barracks a system of line watches, such as now prevails in native corps, might be instituted. At the smaller stations near which there are no troops the store-room must be safeguarded by the railway employés themselves.

In conclusion I append—

(I.) An estimate of the approximate strength of each of the four proposed companies of a battalion of the railway service corps, showing the several grades and classes of the railway employés of each department (corresponding to the company), divided under the headings of European officers, warrant and non-commissioned officers and privates, and native officers, non-commissioned officers and privates. It is thought that the strength here given will allow of $\frac{1}{12}$ of the whole being struck off duty at a time for a month's military training, and of detachments from Nos. 1 and 2 Companies being in addition withdrawn from time to time for practice in the construction, repair and demolition of railway and telegraph lines, under conditions resembling those of actual warfare. I premise, however, that the arbitrary allotment of military rank and functions can scarcely be carried into actual practice. Only personal experience of individuals can afford data for the selection of the railway official best qualified to perform the duties of any particular military grade and appointment.

I have before remarked that in the German railway service the number of officers and non-commissioned officers is abnormally large in proportion to the number of men. This too will be found to be, unavoidably I think, the case in the North-Western Railway Service Corps.*

(II.) The constitution of the Railway and Telegraph Construction Company to be formed in time of war from Nos. 1 and 2 companies of each battalion for service with the front line of the army, with its telegraph and mounted sections.

* The only authorities that I have been able to consult as a guide in making this estimate differ very widely. "Where doctors differ, 'tis folly to be wise." The strength of an Austrian railway company to work from 28 to 37 miles of line is 7 officers, 59 non-commissioned officers and 147 men, or for 100 miles 3 companies aggregating with the Inspection Establishment about 29 officers, 189 non-commissioned officers and 461 men.

I.

A.—No. 1 COMPANY, DEPARTMENT OF DIRECTION, INCLUDING
TELEGRAPH AND MEDICAL ESTABLISHMENT.*European Officers.*

- 1 Manager.
- 1 Assistant Manager.
- 1 Examiner of Accounts.
- 1 Assistant Superintendent of Telegraphs.
- 1 Surgeon.

Total ... 5

Native Officers.

- 1 Inspector of Police (*Subadar*).
- 1 Sub-Inspector of Police (*Jemadar*).

Total ... 2

*European Warrant and Non-Commissioned Officers (Sergeants and
Corporals and Lance ditto).*

- 1 Head Clerk.
- 1 Head Accountant.
- 1 Travelling Inspector of Accounts.
- 1 Head Storekeeper.
- 1 Paymaster Clerk.
- 2 Assistant Clerks.
- 2 Assistant Accountants.
- 2 Sub-Storekeepers.
- 1 Assistant Paymaster Clerk.
- 1 Cashier.
- 1 Sub-Assistant Superintendent of Telegraphs.
- 1 Clerk to Assistant ditto.
- 4 Telegraph Masters.
- 2 Telegraph Sub-Inspectors.

Total ... 21

European Privates.

- 12 Clerks (all branches).
- 15 Telegraph Signallers.
- 1 Battery man.

Total ... 28

Native Non-Commissioned Officers.

- 6 Clerks (all branches).
- 5 Head Constables.
- 1 Head Daftari.

Total ... 12

Native Soldiers.

- 6 Clerks (all branches).
- 25 Line watchmen.
- 50 Constables.
- 5 Daftaris.
- 15 Telegraph Signallers.
- 8 Peons (all branches).
- 12 Line men (Telegraph).
- 10 Workmen (Telegraph).

Total ... 131

Medical Establishment.

- 1 Apothecary (European).
- 1 Hospital Assistant (Native).
- 2 Dressers (1 European, 1 Native).
- 2 Compounders (1 European, 1 Native).

Total ... 6

Grand Total...205

B.—No. 2 COMPANY, ENGINEERING DEPARTMENT.*Officers.*

- 1 Executive Engineer.
- 2 Assistant Engineers.

Total ... 3

Native Officers.

- 1 Subadar.
- 2 Jemadars.

Total ... 3

European Warrant or Non-Commissioned Officers.

- 1 Superintendent of Maintenance.
- 1 Assistant ditto.
- 1 Head Clerk.
- 1 Assistant Clerk.
- 1 Head Draughtsman.
- 2 Engineering Mechanics.
- 1 Ditto for Bridging.
- 3 Clerks.
- 1 Draughtsman.
- 4 Engineering Mechanics.
- 1 Ditto for Bridging.
- 3 Permanent-way Sub-Inspectors.

Total ... 20

Native Non-Commissioned Officers.

3 Permanent way Sub-Inspectors.
 30 Mates of Gangs.
 5 Artisans and Mechanics.

Total ... 38

Native Soldiers.

10 Artisans.
 20 Trollymen.
 210 Gangers.
 1 Daftari.
 4 Peons.

Total ... 245

Grand Total ... 303

C.—No. 3 COMPANY, LOCOMOTIVE DEPARTMENT.

Officers.

1 Locomotive Superintendent.
 2 Assistant ditto.

Total ... 3

Native Officers.

1 Subadar.
 2 Jemadars.

Total ... 3

European Warrant and Non-Commissioned Officers.

3 Running Foremen.
 3 Workshop Foremen.
 1 Accountant.
 3 Clerks.
 1 Head Draughtsman.
 5 Engine-drivers.
 1 Carriage Foreman.
 1 Carriage Examiner.
 1 Shunter.
 2 Head Mechanics.

Total ... 21

European Soldiers.

- 15 Engine-drivers.
- 2 Upper Firemen.
- 1 Draughtsman.
- 20 Artisans and Mechanics.

Total ... 38

Native Non-Commissioned Officers.

- 2 Clerks.
- 1 Assistant Carriage Foreman.
- 1 Ditto do. Examiner.
- 2 Native Shunters.
- 8 Head Native Mechanics and Artisans.
- 6 Head Khalassies.

Total ... 20

Native Soldiers.

- 40 Shunters.
- 50 Artisans.
- 60 Khalassies.
- 40 Firemen and Jacks.
- 1 Daftari.
- 4 Peons.

Total ... 195

Grand Total ... 280

D.—No. 4 COMPANY, TRAFFIC DEPARTMENT.*Officers.*

- 1 Traffic Superintendent.
- 1 Assistant Traffic Superintendent.

Total ... 2

Native Officers.

- 1 Subadar.
- 1 Jemadar.

Total ... 2

European Warrant and Non-Commissioned Officers.

8 Station Masters.
 1 Head Clerk.
 1 Assistant Clerk.
 1 Traffic Inspector.
 8 Guards.

Total ... 19

European Soldiers.

12 Guards.
 6 Clerks.
 6 Station Masters.

Total ... 24

Native Non-Commissioned Officers.

15 Native Station Masters.
 8 Head Pointsmen.
 3 Clerks.

Total ... 26

Native Soldiers.

20 Native guards (breaksmen).
 5 Daftaris and Peons.
 40 Pointsmen.
 12 Khalassies.
 3 Clerks.

Total ... 80

Grand Total ... 153

Total strength of battalion (all ranks), 947.

Such being the railway strength of the four companies, the constitution of the battalion from a military point of view will be as follows :—

EUROPEAN OFFICERS 11.

1 Lieut.-Colonel (*Manager*).
 1 Major (*Executive Engineer*).

4 Captains.

1 Assistant Manager (No. 1 Company).
 1 Assistant Engineer (No. 2 Company).
 1 Locomotive Superintendent (No. 3 Company).
 1 Traffic Superintendent (No. 4 Company).

5. Lieutenants.

- 1 Assistant Superintendent of Telegraphs
(No. 1 Company).
- 1 Assistant Engineer (No. 2 Company).
- 2 Assistant Locomotive Superintendents
(No. 3 Company).
- 1 Assistant Traffic Superintendent
(No. 4 Company).

NATIVE OFFICERS 10.

4 Subadars.

- 1 Inspector of Police (No. 1 Company).
- The remainder must be borne on the staff of battalions for military duties only, unless they are found qualified for responsible railway appointments.

6 Jemadars.

- 1 Sub-Inspector of Police (No. 1 Company).
 - 2 For No. 2 Company
 - 2 „ No. 3 „
 - 1 „ No. 4 „
- } These, like the Subadars, must be borne on the battalion staff.

EUROPEAN WARRANT AND NON-COMMISSIONED OFFICERS AND PRIVATES.

WARRANT OFFICERS 13.

No. 1 Company—4.

- * 1 Travelling Inspector of Accounts.
- 1 Head Storekeeper.
- 1 Sub-Assistant Superintendent of Telegraphs.
- 1 Head Clerk to Manager.

No. 2 Company—4.

- 1 Superintendent of Maintenance.
- 1 Engineering Mechanic.
- 1 Do. for Bridging.
- 1 Head Draughtsman.

No. 3 Company—3.

- 1 Running Foreman.
- 1 Workshop Foreman.
- 1 Carriage Foreman.

* Should be entered under heading of Pay Establishment.

No. 4 Company—2.

- 1 Station Master.
- 1 Traffic Inspector.

SERGEANTS OR LANCE-SERGEANTS 25.

No. 1 Company—5.

- 1 Clerk to Assistant Superintendent, Telegraphs.
- 2 Telegraph Masters.
- 1 Assistant Clerk to Manager.
- 1 Sub-Storekeeper.

No. 2 Company—4.

- 1 Assistant Superintendent of Maintenance.
- 1 Head Clerk.
- 1 Engineering Mechanic.
- 1 Permanent way Inspector.

No. 3 Company—9.

- 2 Running Foremen.
- 2 Workshop Foremen.
- 1 Accountant.
- 1 Head Draughtsman.
- 2 Engine-drivers.
- 1 Head Mechanic.

No. 4 Company—7.

- 1 Head Clerk.
- 3 Station Masters.
- 3 Guards.

CORPORALS AND LANCE-CORPORALS 37.

No. 1 Company—6.

- 1 Assistant Clerk.
- 1 Sub-Storekeeper.
- 2 Telegraph Masters.
- 2 Telegraph Sub-Inspectors.

No. 2 Company—12.

- 1 Assistant Clerk.
- 3 Sub-Clerks.
- 1 Draughtsman.
- 5 Engineering Mechanics.
- 2 Permanent-way Inspectors.

No. 3 Company—9.

- 3 Clerks.
- 3 Engine-drivers.
- 1 Carriage Examiner.
- 1 Shunter.
- 1 Head Mechanic.

No. 4 Company—10.

- 4 Station Masters.
- 1 Assistant Clerk.
- 5 Guards.

EUROPEAN PRIVATES—90.

No. 1 Company—28.

- 12 Clerks.
- 15 Telegraph Signallers.
- 1 Battery man.

No. 3 Company—38.

- 15 European Drivers.
- 2 Upper Firemen.
- 1 Draughtsman.
- 20 Artisans and Mechanics.

No. 4 Company—24.

- 12 Guards.
- 6 Clerks.
- 6 Station Masters.

NATIVE NON-COMMISSIONED OFFICERS AND PRIVATES.

HAVILDARS AND LANCE HAVILDARS—33.

No. 1 Company—5.

- 3 Clerks.
- 2 Head Constables.

No. 2 Company—14.

- 3 Permanent-way Sub-Inspectors.
- 10 Mates of Gangs.
- 1 Mechanic.

No. 3 Company—8.

- 1 Assistant Carriage Examiner.
- 1 Assistant Carriage Foreman.
- 1 Clerk.
- 1 Assistant Shunter.
- 4 Head Native Mechanics and Artisans.

No 4 Company—6.

- 5 Native Station Masters.
- 1 Clerk.

NAIKS AND LANCE NAIKS—63.*No. 1 Company—7.*

- 3 Clerks.
- 3 Head Constables.
- 1 Daftari.

No. 2 Company—24.

- 20 Mates of Gangs.
- 4 Artisans and Mechanics.

No. 3 Company—12.

- 1 Clerk.
- 1 Assistant Shunter.
- 4 Head Native Mechanics and Artisans.
- 6 Head Khalassies.

No. 4 Company—20.

- 10 Native Station Masters.
- 1 Head Pointsman.
- 2 Clerks.

NATIVE PRIVATES*—651.*No. 1 Company—131.*

- 91 Railway employés.
- 40 Telegraph employés.

No 2 Company—245.

- 245 Railway employés.

No. 3 Company—195.

- 195 Railway employés.

No. 4 Company—80.

- 80 Railway employés.

PAY ESTABLISHMENT—7.†

- 1 Paymaster (*Examiner of Accounts*).
- 1 Assistant Paymaster (*Head Accountant and Warrant Officer*).

* For details consult List No. 1.

† Such an establishment is, of course, not required for the mere pay-work of the railway battalion, as a military body, but for the Railway Account Pay, &c.

Sergeants.

- 1 Paymaster Clerk.
- 1 Cashier.

Corporals.

- 2 Assistant Accountants.
- 1 Assistant Paymaster Clerk.

MEDICAL STAFF—7.

- 1 Surgeon.
- 1 Apothecary (*Warrant Officer*).
- 1 Hospital Assistant (*Native*).

European Privates.

- 1 Compounder.
- 1 Dresser.

Native Privates.

- 1 Compounder.
- 1 Dresser.

Grand Total (all ranks) 947 exclusive of military staff.

Grand Total of corps 2,841 of all ranks except military staff officers and non-commissioned officers.

II

RAILWAY AND TELEGRAPH CONSTRUCTION COMPANY.**A.—RAILWAY SECTION. EUROPEANS.***3 Officers.*

- 1 Executive Engineer (Major in Command).
- 1 Assistant Engineer (Captain).
- 1 Assistant Engineer (Lieutenant).

3 Warrant Officers.

- 1 Superintendent of Maintenance.
- 1 Engineering Mechanic.
- 1 Engineering Mechanic for Bridging.

4 Sergeants and Lance-Sergeants.

- 1 Assistant Superintendent of Maintenance.
- 1 Engineering Mechanic.
- 1 Head Clerk.
- 1 Permanent-way Inspector.

10 Corporals and Lance-Corporals.

- 2 Draughtsmen.
- 4 Engineering Mechanics.
- 2 Clerks.
- 2 Permanent-way Inspectors.

NATIVE RANKS.**10 Havildars and Lance Havildars.**

- 3 Permanent-way Sub-Inspectors.
- 5 Mates of Gangs.
- 2 Mechanics.

22 Naiks and Lance Naiks.

- 15 Mates of Gangs.
- 3 Head Constables.
- 4 Artisans and Mechanics.

244 Native Privates.

- 200 Gangers.
- 30 Railway Police and Watchmen.
- 10 Trollymen.
- 4 Daftaris and Peons.

Total ... 296

B.—TELEGRAPH SECTION.*See above pages 40—41.***C.—MOUNTED SECTION.**

- 1 Captain (Assistant Engineer).
- 1 Warrant Officer (Engineering Mechanic or Superintendent of Maintenance).

3 Sergeants.

- 1 Assistant Superintendent of Maintenance.
- 1 Permanent-way Inspector.
- 1 Assistant Engineering Mechanic.

3 Corporals.

- 1 Assistant Engineering Mechanic.
- 1 Permanent-way Sub-Inspector.
- 1 Telegraph Sub-Inspector.

4 Havildars.

- 2 Permanent-way Sub-Inspectors.
- 2 Mechanics.

8 *Naiks.*

5 Mates of Gangs.

2 Head Constables.

1 Telegraph Signaller.

80 *Native Privates.*

20 Railway Police and Watchmen.

50 Gangers.

10 Telegraph Line men.

 Total ... 100

NOTE.—The battalion military staff is as given above on pp. 44—45.

The great preponderance of European non-commissioned officers over European privates seems quite unavoidable. These non-commissioned officers can be employed in supervising the drill and training of the Native as well as the European privates, under the orders of the European officers. They will be most useful in the Railway Construction Company to command and control the native soldiers. Care must of course be taken that the functions of the European non-commissioned officer do not clash with those of the native officer and non-commissioned officer.

The railway police and line watchmen may be advantageously trained as part of the Construction Company, especially of the mounted section. With this object in view a certain proportion of them should be drawn from the native cavalry.

All ranks of the railway corps can be brought up without expense from any part of the line to corps or battalion head-quarters for the annual courses of military drill and railway and telegraph construction training.

Officers being few in each battalion the warrant officers will be available to take their places in time of need.

MUSKETRY INSTRUCTION.

By FREE LANCE.

THE author of that splendid work "Infantry Fire Tactics" towards the end of his book has a chapter on Musketry Regulation and Instruction, saying that our present system is wrong because we went in for individual firing, which in modern warfare is of little account, and we have been trusting too much to a supposed superiority of weapon which is also of little account unless there is a well-instructed man behind it.

In my paper I will go further than Mayne, and what I am about to propose will, I know, strike all who are wedded to "musketry" in this sense of the word, and which to them means nothing more than "Ranges," "Targets," "Returns" and "Figure of Merit." Mayne strikes heavily at our present system; I would give it its deathblow. He says truly we have no fire discipline, and are only just awakening to the fact. This lack of fire discipline was noticed by the foreign officer at Delhi, and it is noticed by some of our best general officers, but this is only what must be expected of all troops who are bred to the system of target-shooting and who look upon a good figure of merit as the acme of excellence. Let us then adopt some other system which will give us the discipline so much needed, and without which troops are led to *useless slaughter*.

My proposal is that *range firing* and *target practice* should only be for recruits, who, until he can shoot well, should be kept at it till he thoroughly knows what his rifle can do, and himself how to do it; *then from the time he is passed into the ranks he should never fire a shot again at a target* but should go through, monthly, a course of field firing and instructional firing. By the latter I mean long range volley, rapid volley and mass firing with use of different sights; all these practices not to be at targets but at objects and distances and circumstances as like real warfare as possible.

The field firing to be as thoroughly practical as possible on a carefully and *intelligently* prepared position (not as is usually seen at most stations, targets and screens of absurd dimensions placed in such absurd positions that an enemy would be a fool to occupy). Again field firing with 10 or 20 rounds of ammunition is absurd; they should have at least 50 rounds per man. Let each stage of attack be carefully conducted, the number of rounds fired carefully considered, and after each stage let certain percentage of men and officers fall out to represent casualties, so that the reinforcing of the attacking line may be done under circumstances as like the real thing as possible. When the attacking line has reached

a stage 500 yards from an enemy, when after such an attack, ammunition begins to run short, let it be replenished and attack resumed. When the decisive distance is reached let a very heavy *independent* fire be kept up to twenty rounds ; then "cease fire" to rush the position, all the fire *before* this period being controlled fire ; at the decisive distance the fire will of itself emerge into independent, so it is better to cause order out of disorder.

Such attacks, practised and properly carried out every month, will, until those principles of fire discipline which are so shortcoming with us and by being constantly practised, become habitual, habit becoming second nature.

Our troops and companies should be divided administratively and tactically into recognized groups, each under its own non-commissioned officer. These again should be thoroughly trained in all the important duties of section and group leader, most especially so in those of collective firing. The essence of my proposed system is thorough instruction and thoroughly reliable non-commissioned officers ; these are the backbone of any army ; every trouble should be taken to make them thorough "soldiers"—the British army translation of a good non-commissioned officer being, I am afraid, mostly a "good clerk."

It is a well-known fact proved by modern battle that, when once a line gets engaged, the control of the fire passes into the hands of the practised leaders, the company officers giving the general directions ; but it is the group leaders that really control the fire, hence it is easy to see how their education on fire discipline will control the fire. If the education has been perfect, and comes to them as a matter of every-day life, the control will be perfect and consequently the fire deadly ; if the education is imperfect, and the discipline only resorted to in the day of battle, the fire will be erratic and wasted, and the result, deadly slaughter and repulse.

Such a system will open a new era for the British army ; it will no longer be the bye-word for wild firing and lack of fire discipline. Let us candidly take to heart the criticisms of the foreign officers, remembering they have been through the fiery ordeal of modern battle and have deeply and earnestly studied the subject. We have no such vivid experiences to go on.

We know the splendid material we have for making the best soldiers in the world ; let us teach them in a manner that all the excellence will be doubly useful. The time is coming nearer than perhaps most of us imagine, when we shall have to enter on a campaign against the disciplined soldiers of Europe (not ignorant, ill-armed savages). We could not do so with "light hearts," but anyhow let us do so knowing that everything has been done to make the machine perfect in every sense, and then with our men's stout hearts, and their perfect discipline, bring them through the fiery ordeal, with the battle flag of old England still to the front in victory. God forbid that it ever should be in defeat. We cannot muster our soldiers in millions like Continental nations ; the more reason for us then to make the few we have as perfect soldiers as possible. "Fire is everything."

I would propose abolishing musketry prizes as they are at present, and would substitute the following:—

One prize to the best battalion in the Presidency in field and collective firing.

One prize to the best troop or company in a regiment for the same.

One prize to the best section or group in a company for the same.

Let the individual emulation be kept up by good shooting and matches not by Government prizes, which should only be for field and collective firing. Let all the field firing be arranged by a committee of officers to ensure it being done practically. At present in most stations it is most *unpractical*; most absurd targets and screen placed in as absurd positions, which no enemy, however savage, would dream of occupying—the results of such field firing must be fictitious. I would here make a suggestion with reference to Native Army Musketry Regulations as they are at present. It is well known that in every regiment there are a number of men who are useless as soldiers; not only can they not shoot but are useless in every respect. Now why are these men kept on? A special clause in the Pension Regulations called clause (c) can get rid of these men, that is, if they are qualified for pension by service; but what is to be done with men who are under 15 years' service, and whose presence as useless men is an encumbrance to these regiments, because year after year these men are practised, and year after year fail to pass out of second class, and hence destroy, as regards the "figure of merit," the exertions of their comrades in shooting? These men cannot be got rid of unless they claim their own discharge; they become a bad example to their comrades, and draw Government pay as useless men. Now I would suggest a special clause being inserted in the Native Army Musketry Regulations authorizing a Commanding Officer summarily discharging from the service any man of less than 15 years' service who fails after two annual courses to pass out of the third class provided he is a useless soldier in other respects. The Commanding Officer will hail with delight the order, and the State will be saved the expense of paying a useless man. The above is of course with reference to the present system *in view*; *the presence of such men would be impossible*, as such men could not be in the ranks, as they would have been turned out *when recruits* as failing to come up to the required standard.

I would further recommend that *all* native officers and non-commissioned officers of native army be made to pass through a school of musketry and get company certificate *to ensure having perfect instructors*.

In continuation of the above remarks I will now go a little more into details. In the first place the system depends, hangs and lives on the thorough efficiency of the non-commissioned officers.

It should be insisted that every non-commissioned officer of the native army go through a course of instruction at a school of musketry, in the same way that non-commissioned officers of British regiments do; also that no non-commissioned officer be ever permitted to command a section or

group unless he is certified as an efficient instructor, and that a knowledge of reading and writing, the former certainly, be a *sine quâ non* for a non-commissioned officer.

Good drill is the foundation of good shooting and musketry. By good drill good discipline is inculcated, that is men will do what they are told at once and with precision. I am convinced that where there is bad shooting, there you will find bad drill. It stands to reason that men will not shoot well if they don't know their firing exercise properly. If this were not the case, why is it that at the school of musketry it is the first thing they put you to?

Each regiment should go through four practices in field firing once a year. (I had intended that it should be once a month, but I know the old cry of expense would come in.) At each practice 50 rounds of ammunition should be fired to accustom the officers and group leaders in all the phases of attack, and the men to the bodily and mental strain that are necessary in the attack, thus—

1st Stage.—1,200 to 900 yards (preparation) 15 rounds.

2nd Stage.— 900 to 700 " (") 10 "

3rd Stage.— 700 to 400 " (fix bayonets) 10 "

4th Stage.— 400 to 200 " (crisis) 15 "

Fire in volleys with fixed sight at 400 yards ; aim to be taken at bottom of objective, followed by ten rounds rapid independent fire with the same fixed sight, and some aim followed by cease fire, hurrah and rush. Each troop and company should also be practised every two months in the following *instructional* firing :—

Long Range Volley.—On prepared ground 15 rounds.

2,000 yards 5 rounds.

1,500 " 5 "

1,000 " 5 "

After the fire is over each unit should be marched over the ground to observe the effects of their fire ; in this way the men would become alive to the effect of it.

Rapid Volley Firing.—On screens representing squadron of cavalry at 800 yards, 500 yards and 300 yards.

Three volleys to be delivered by groups independently, one at each of above distances, in two minutes. This practice to represent the requisite celerity of fire necessary to meet the charge of cavalry—a squadron taking about two minutes to gallop over 800 yards of ground.

Volleys at changing objectives.—At screens representing cavalry placed at three distances, 900 to 500 yards, at an angle to original front, and the volleys to be delivered without shifting position ; thus,—

1st Volley at 900 yards half left.

2nd " at 700 " to the front.

3rd " at 500 " half right.

Volley and independent firing as performed during the crisis of attack, *i.e.*, five volleys by group, then ten rounds rapid independent fire followed by "cease fire," and rush with fixed bayonets ; five volleys by

groups at lines of screens from 6 feet to $2\frac{1}{2}$ feet dispersed over ground between 400 yards and 200 yards; after this the line of screens at 200 yards $2\frac{1}{2}$ feet high increase, and then ten rounds very rapid independent firing.

It would be more instructive if in front of the 200 yards line some damp grass were collected and set fire to, so as to represent the smoke that hangs on the edge of infantry heavily engaged.

The five volleys and the ten rounds independent to be fired with a fixed sight at 400 yards, and aim in all cases at the foot of objective or the bottom edge of the smoke, followed by cease fire repeated by the *whistle* of group leader, and rush made with fixed bayonets.

All the above practices should be carried out by companies separately, so that it may be conducted carefully and instructively. The men after firing to be invariably taken over the ground to note the effects of their fire.

Marksmen Practice.—Five rounds in single shots at figures representing solitary horsemen reconnoitring at distances varying between 1,500 and 1,000 yards.

Three rounds in volleys at screens representing masses of cavalry and artillery at 1,000, 1,500 and 2,000 yards.

Judging Distance.—For all officers and non-commissioned officers and marksmen, once every month at distances varying from 400 yards to 1,500 yards.

It is no use making men do judging distance (though they should go through judging distance drill when recruits), as they should *never be allowed to fire on their own account*. Every kind of fire to be in the hands of officers and group leaders, the distances being invariably given by them, hence the absolute necessity for these being proficient in judging distance.

The use of the Stadiometer to be abolished, and a good, simple, easily-worked instrument *under fire*, and as such the Lobbez or Bates to be officially recognised instruments.

Revolver Practice.—For all who are armed with that weapon to be compulsory and shewn in returns.

36 rounds once every quarter, *i.e.*, 12 rounds continuous practice at 15 yards, 6 with right hand and 6 with left.

12 rounds single practice at 20 yards, 6 with right and 6 with left hand.

12 rounds single practice at 25 yards, 6 with right and 6 with left hand.

Whistle Practice.—Every officer and non-commissioned officer should be thoroughly instructed in the whistle. All movements of attack to be conducted by whistle only, the bugle being the officer commanding the regiment's call. A special signal should be adopted for fixing bayonets, which, if not given, should be ordered when the 400 yards stage is reached.

Replenishing Ammunition.—This is the most important of an attack, and every means should be adopted to practise some good method, so

that men may be in the habit of doing so whenever the attack formation is used.

The following seems a fair way :—

Each company should have a staff of 16 men, *i.e.*, supposing a company be divided into four sections, and section into two groups, there will be eight groups per company ; there should be two men per group as ammunition servers.

All the servers should keep together so long as the company acts united, but separate immediately the company extends for attack, each pair of servers following behind their respective groups.

Each pair of servers should carry between them a canvas bag with a couple of handles ; each of these bags should contain 20 packets of ten rounds each. Each server should in addition have a smaller canvas bag capable of containing ten packets. When the signal for fresh ammunition is made, one of the servers fills his personal bag, runs up into the firing line, and serves out. When the group servers find they are running short, signal should be made to the regimental ammunition reserve, but they themselves should never leave their places behind their groups. They should also be instructed to collect the ammunition of the killed and wounded as they are struck down. It would be as well to have extra men told off as a reserve to the group servers to provide for casualties amongst them. I think this extra 20 rounds per man, in addition to what the men already carry on their person preparatory to entering into action, should be enough. On the defence more ammunition would be required, and the means of replenishing it are more easy than in attack.

Entrenching Drill.—From what we have read of recent battles it seems that troops attacking will have to resort to hasty spade work to fasten on to ground already gained. The sooner our men are given *each* a light entrenching spade the better, so that when the destructive game of fire is reached, or whenever the attack checks the men, they can get rapidly into cover even of the highest description.

The officer should be specially trained to adopt the shelter trench to the form of ground, so that the greatest tactical use may be got from it.

No one who has read of Skobeloff's attacks at Plevna will doubt the use of the spade in the attack. Here the troops were continually defeated till the spade helped them.

It will be seen that my system is the group system, and I feel convinced that it is the only system under which random fighting can be carried out, and is more especially adaptable for our troops. This system *exists* on the thorough efficiency of officers and non-commissioned officers. Each group of a company should have its own leader, and if he is unavoidably absent or is struck down, his place should be at once filled by the senior man of the *same group*, so that the men will always have an accustomed voice and presence before or behind them. Let the greatest rigour be exercised in the selection of these group leaders, and all in competent men got rid of without favor or affection.

All groups should especially be trained to *combine* under a common impulse in a *forward* movement ; no backward movement should *ever* be made *without express order*.

There are men in every rank who will be more forward than others ; these are the gallant hearts that inspire vigor into the attack wherever their presence may be, and it is these impulse *forward* that officers should watch for and timely support. " *En avant,*" press on, heap on fire, get to the decisive distance, and combine a heavy fire, the crisis must come, one must give way, and woe to one that does.

" *No battle has ever been won from long range fire.*"

Rallying is another important part of the attack, and should regularly be practised ; it is a well known fact that the body of men which have just carried a position is more or less spent ; now comes the time to rally quickly, pursue the foe with volleys, look out for counter-attack, and fasten on to the position gained.

By such a system of instruction the company and group commanders will acquire a rare facility in handling their various commands ; vigor and precision will be the result, and the men from being in constant habit will acquire promptness and celerity, and the fire will be from the same habit controlled and deadly.

What is still further required is that all superior officers should acquire the necessary tactical ability in handling masses of men. I would recommend that during the drill season *all the field officers* of a brigade have a turn at command, and after each field day the general officer assemble the officers and point out mistakes and mention those who did well ; let emulation and *professional* zeal be inculcated. Now-a-days a field day is looked on as a perfect bore, and the troops consider themselves *uselessly* worried. All brigades and divisional drills should be with a part of the force as enemy, so as to give a *point* to the instruction.

It will only be by very careful preparation that we shall be able to come up to the continental requirements of good fire discipline ; it cannot be made a makeshift of to suit the occasion ; it must be carefully prepared, learnt and carried out by *constant habit*. It stands contrary to all past lessons that men will ever do anything that is pitched on to them at the last moment.

No army that is bred to *target-shooting only* will ever acquire good fire discipline, because all its requirements are unfitted for the mental and physical strain required in modern fighting. The object, distances and condition are *totally* different.

Let us regret the old fad, and adopt practical firing under conditions as much like real service as possible ; let officers and men become habituated to the efforts that will be required of them, and then we shall see attacks promptly, vigorously and decisively carried out. Let us develop that coolness and dogged tenacity for which the British soldier is fond, and give him that fire discipline he so much needs ; then let the next campaign come, we may feel sure that the machine is well oiled and ready.

Can we feel sure of the machine now ? The sooner the native army is armed with the same weapon as the British soldier the better, and if *target-shooting* and a *figure of merit* is still to be the criterion of

excellence, the sooner the native musketry regulations are revised the better; *everything* should be *provided for* and distinctly set forth; at present there are many loop holes for fictitious firing. It can never be ascertained that any two regiments have fired their annual course under precisely the same condition (I don't mean weather). Very great laxity in deciding what is legitimate or illegitimate exists. This I put down to the *figure of merit*; the proficiency, *save the mark*, of a regiment depends on its figure of merit; *how* it is obtained is quite another matter, so long as it is obtained. I say again that the figure of merit is fictitious and does not tell the real proficiency of a regiment, and till the regulation can lay down a standard system of firing the annual course even to minute details, you can never depend on the so-called figure of merit.

In the native army the want of fire discipline is much felt. The stricter the discipline inculcated in time of peace the better will the result be in time of war; too much praise cannot be taken. We must recollect that, however good our native troops are, or we suppose them to be, they have still their "baptism of fire" (modern fire) to go through. We all know too how anything like sudden and severe loss is likely to affect the native mind: we also know too what a native is when he is suddenly ordered to do anything he has hardly ever done before. Let us then avoid the chance of anything like confusion or panic, by constantly drilling men and non-commissioned officers into habits of controlled fire, and acquire that discipline which is so indispensable for modern fighting. Let any one go into the firing line of a native regiment, and he will be convinced. Of course some regiments are better than others, but the exceptions are few. There are no men in the world such creatures of *habit* as a native of Hindustan. This appearance of being *wound up* is apparent in any regiment. Let the slightest difference be made in the winding up, and see how the clock goes. One of the foreign officers at Delhi told me that he particularly noticed in a native regiment that during the attack, as long as the British officer was present and directing, things went well, but that if his voice and example were absent, and the native officer had the control, the attack lost energy and discretion and the fire got wild. These remarks were made to me by one of the keenest of our critics. I am convinced he saw truly, but I did not tell him so.

We must *thoroughly* train the native officer and non-commissioned officer and insist on thorough competency, without which it is useless attempt to instil fire discipline into the men. The native soldier looks to his leader for orders and example. If they distrust the capability of their leader they are no longer soldiers, but become a rabble; one of the chief objections to my system will be that of expense, but for the extra expense I can supply extra proficiency. Is it always to be the miserable policy of "spare the expense and let proficiency go to the dogs?"

When a man has to fight for *his riches*, what is the use of his wealth to him if his sword fail him in the hour of need? He may indeed *buy his enemy off*, but at what loss?

THE SUPPLY OF AMMUNITION TO INFANTRY ENGAGED ON THE OFFENSIVE.

By CAPTAIN H. FAITHFULL, *D.A.A.G. for Musketry.*

THE great importance of the supply of ammunition to infantry on the offensive, though it has often been alluded to in our military papers and journals, is one which we have never yet thoroughly grasped, presumably because its vital necessity has never been experienced by us. Even in the Franco-Prussian war there were several instances of defect through want of ammunition only: the troops defending St. Privat fired away all their cartridges, and had to retire purely for want of ammunition, and at the action of Champigny the French had 108 rounds per man, which were nearly all used up and they had to retire. All continental authorities are unanimous on the two following points: First, that a certain proportion of the troops, though not all, told off for an attack, must be provided with an enormous increase of ammunition over and above the quantity carried by the men under ordinary circumstances in the field—some even considering the total carried should be as high as 200 rounds per man. Second, that no ammunition wagon or pack animal can possibly be brought up to an engaged fighting line, and therefore there must be some special provision to meet this difficulty.

Chapter XII of Captain Mayne's *Infantry Fire Tactics* is devoted to discussing the supply of ammunition on the field of battle, and that portion of it dealing directly with the supply to infantry engaged on the offensive, after recapitulating the various methods devised by continental nations to meet this supply, goes on to say: "Our regulations are quite silent concerning the connection which exists between engaged troops and the battalion ammunition carts." And a little further on: "Nothing has been clearly laid down on the very important question of how cartridges are to be brought to the men from the battalion ammunition reserves. This is the knotty point, and Captain Mayne states that all continental nations have found it to be an almost insoluble problem, but at the end of the chapter in his resumé he lays down certain points to be observed in devising any method to render the supply of ammunition on the battle-field as perfect as possible. It is from the hints contained in the first two paragraphs of this resumé that I have worked out the following plan, and as so far as I am aware no method of meeting the difficulty based on these lines has yet been made public, I hope I may be pardoned for venturing to suggest one.

In our army every detail is minutely described, from the manufacture of the component parts of the cartridges, through the various channels these have to pass to arrive with a battalion on the field of battle, either

in the pouches of the soldiers or in the cases carried by the first regimental reserve of ammunition ; but from the moment the battalion forms for attack, these last-named cartridges of the first reserve are left rather to themselves to find their way from their carriage to the pouches of the men who will require them, for, excepting some circulars that are not very generally known in the army, and that deal somewhat vaguely with this part of the question, no orders that I have seen have been issued on the subject. According to A. G.'s Circular Memo. No. 2401E, dated the 9th October 1884, the place of the first reserve of ammunition is laid down as immediately in rear of the battalion in column of route, and directly the fighting formation is assumed the Pioneers take charge, and under the direction of the sergeant conduct the mules to the rear of the reserve companies and await orders, &c. &c. The only mention directly made of the way the cartridges are to reach the men is in the 3rd paragraph : " And when a demand is made from any part of the fighting line, a Pioneer will be sent with his three mules to the spot where the ammunition will be distributed by the supernumerary rank : the Pioneer will then take the mules back to where he came from, &c., &c." And at the end of this circular comes the para. : " It is thought that the above system will be sufficient for all practical purposes, all details being left to be filled in by commanding officers on the spot according to varying circumstances."

At the late Delhi Camp of Exercise it was seen how very indifferently the first reserve of ammunition was attended to, and under the orders of His Excellency the Commander-in-Chief, attention was drawn to the very careless way the mules carrying this reserve were brought up over perfectly open ground under a heavy fire.

Now Captain Mayne (page 272) very reasonably argues out the inadvisability of supplying the fighting line by means of men moving between it and the ammunition supply ; for besides the very small quantity such men can take up to the fighting line he says (page 273) : " It is very unfair to expect men to cross and recross a fire swept by one simply carrying ammunition, and it is more than probable that, when once these men reach the fighting line, they will remain there even if their own rifles have been left behind, for they can get rifles from the dead and wounded men. Men should not be taken from the firing line to the rear to find ammunition, and the officers in the fighting line have quite enough to occupy their whole attention in conducting the advance of the firing line without having to think whether their ammunition is running short or will suffice. All arrangements for replenishing the emptying pouches of the firing line must be made from the rear, for those behind can very easily observe, by the intensity of the fire in front, when the firing line is likely to require a fresh supply of ammunition. All these inconveniences are best met by taking the men for supplying ammunition from the supports and reserves.

The infantry soldier's service coat should be provided with two pockets, to hold at least in each pocket two and as many as four packets of ammunition of ten rounds each. A step in the right direction has been

taken in ordering the service coat to be provided with bandolier pockets, but more is required, and I venture to suggest a pair of pockets similar to those on a Norfolk jacket, capable of containing four packets each, and the men should be instructed always to use any extra supply they may have distributed before they fire away a single round out of their pouches, for by so doing they will always know when that extra supply is fired away that they still have their ordinary supply to fall back on.

At present our first reserve of ammunition is carried at the rate of thirty rounds per man, on the paper strength of a battalion, but as the men actually present on going into action are always far below this strength owing to depôts, guards, sick, &c., &c., it may be allowed that this first reserve is actually sufficient for 40 rounds per man going into action; but this is not enough, for Captain Mayne (page 269) states: "Each soldier will require at least 120 to 150 rounds in the preparation of an attack to overcome the efficacy of the enemy's fire, which alone prevents an assault being given": this first reserve should therefore be carried for 50 rounds per man instead of 30 as at present.

In attacking an enemy on the defensive, the supports must join the fighting line, and the reserves too will have been merged in this line before a sufficient effect will have been produced to enable this fighting line, encouraged by the near approach of the second line, to rush the enemy's position. Now, as both supports and reserves of the attacking battalions have to join the fighting line, and as each approximately equals the line it reinforces, the supports equalling the fighting line and the reserve these two together, I propose to make these supports and reserves bring up the extra supply of ammunition required by the conditions of modern warfare, and so far as Captain Mayne's axioms in his resumé are concerned this method complies with the principles he inculcates.

In column of route, and up to the moment the battalion assumes the attack formation, the first reserve of ammunition accompanies the battalion. The method of distributing this reserve to the men about to engage in an offensive action is as follows: On the command the battalion will extend for attack; that portion of it told off to form the fighting line should at once have six packets per man distributed to it from the first reserve, each man carrying three packets in each of the two pockets already proposed to be made on the service coat. As the battalion in all probability is not under fire at this stage of the action, the distribution might be carried out by ordering up two mules to each company detailed for the fighting line, and the supernumerary rank of each company assisted by the Pioneers in charge of the first reserve should hand out six packets to each man of the fighting line: the fighting line might then advance, extending on the march, and the portion of the battalion detailed for the supports should have four packets per man distributed to it before it moves on to take its place in attack formation: similarly the reserve should be served out with four packets per man. As the first reserve, at the rate of 50 rounds per man calculated for 800 men, amounts to 40,000 rounds, it would require in even

numbers 84 mules to carry it, so that to quicken the distribution of reserve ammunition eight mules might be detailed to supply the fighting line and six the supports, and the last company of the battalion reserve might wait to be supplied till the fighting line and supports have had their extra ammunition distributed to them in order to empty any "broken" boxes.

While this issue is proceeding the commanding officer might advantageously avail himself of the opportunity to explain the objective of the attack to the officers of the battalion, for, though the field exercises direct that this should be done even on every instruction parade, it is still the commonest thing in the world to find that not a single company commander has the least idea of what the objective is and which is the point he should direct the fire of his company on.

The carriage of the first reserve of ammunition will have been now nearly emptied, and should be sent back to the second reserve to replenish, with orders that when this has been completed it is to return to the place the battalion extended for attack at and to follow up in rear of the second line till the enemy's position has been carried, when it can rejoin its own battalion as it reforms on the second line passing it to carry on the pursuit; and the supply of ammunition now brought up, allowing for ordinary casualties in the attacking battalion, should suffice for another distribution of 60 rounds or even 70 rounds per man.

It may be presumed that the original fighting line of a battalion in attacking will have expended about 20 rounds per man before it will be necessary for the supports to reinforce it to carry it on. As this fighting line had 60 rounds per man served out to it in addition to its 70 ordinarily carried, it will still have as many rounds per man left when the supports come up as these arrive with, presuming it to have fired away 20 rounds per man. Supposing this new fighting line has to expend 40 rounds per man before it becomes necessary for the battalion reserve to reinforce it, it will still have its original supply of 70 rounds per man, and as the reserve comes up with 40 rounds per man extra these reserve men should be instructed to hand over two packets each to each man of the fighting line, and allowing for casualties to have been about equal in the three parts into which the battalion is divided on forming for attack; when the whole battalion becomes merged in one line it will still have 90 rounds per man to carry it over the final stages of the attack—an ample allowance according to all modern writers on the subject.

As the battalion will usually extend for attack at about 2,000 yards from the enemy's position, and it may be presumed that fire will be opened on the enemy at about 1,000 yards, the men of the first fighting line will have had to carry the extra weight of six packets (about 6½ lbs.) for, say, 1,000 yards: the supports will have to reinforce the fighting line at about 800 yards, so they will have had to carry four packets (4½ lbs.) for about 1,500 yards, and the reserves will have to carry a similar extra weight for about quarter of a mile more than the supports. Now, considering the vital importance of a full supply of ammunition

to infantry on the offensive, this cannot be urged to be too great a task to demand from the ordinary soldier.

In accordance with all the latest ideas of those continental authorities who have studied the subject, a portion of the force must in future be told off to subdue the enemy's fire before any direct frontal attack can be attempted, and it is to meet the requirements of such a force that the above method has been worked out, which allows for the men first engaged having 150 rounds each, those next engaged 130, and the last to come up 90 rounds per man; and 70 rounds is generally admitted to be ample for the force which actually makes the frontal attack after the enemy has been shaken.

The extra supply of ammunition to troops about to engage could be increased on the above plan to a very great extent by serving out six or even eight packets to each man of the battalion before assuming the attack formation; but the necessity for so great an extra issue would very seldom arise; still, if from the enemy's position, &c., it was previously known that very great resistance would have to be overcome before a direct attack was attempted, such an extra issue might be ordered instead of that advocated above, and to assist the men in carrying the extra load, as this large issue would empty the carriage of the first reserve, it might well be employed in taking back part of the kit carried by the soldier, say his great-coat, when it returned to the second reserve to replenish, and as in replenishing it lightens the loads of the second reserve carriage, the great-coats or whatever was directed to be left behind could be transferred to this second reserve, and as this also is under regimental charge the men would get back their kit on reaching camp.

In fact, in distributing the first reserve of ammunition as above suggested, it would be an advisable plan to direct the men to replace the weight taken off the carriage of the first reserve by their great-coats, and these should be taken to the second reserve to replace the ammunition the first reserve will take away from it. Taking away the cartridges from the first reserve sets free a certain amount of carriage, and the above suggestion of relieving the men of part of the weight they ordinarily carry is but one of many ways this reserve carriage might be utilised, for, amongst others, if it is not thought too great a task to put this extra load on the soldier, it might be employed to assist in the carriage of wounded men to the rear.

Lecture given at the United Service Institution of India, on the 6th May, 1887, by Mr. J. H. B. Hallen, General Superintendent, Horse-breeding Operations in India.

GOVERNMENT HORSE-BREEDING IN INDIA.

Major-General E. F. CHAPMAN, C.B., A.-D.-C., Quarter-Master-General in India, in the Chair.

PAST, PRESENT AND FUTURE.

THE late Stud Department was originally established in or about the year 1794 at Hajipur, on the banks of the Gunduk, in Tirhoot, North Behar.

2. In the same year Stud buildings were erected at Poosa, which was considered a better and higher site.

3. Afterwards Stud depôts at Koruntadhi, Buxar and Ghazipur were established in the year 1816.

4. The moist climate and the soil, generally possessing little trace of lime, of Lower Bengal proved unfavorable for horse-breeding; but in the early days of the Department the British frontier did not extend further north, so a more suitable site was not then available.

5. Mr. W. Moorcroft, appointed Superintendent of the Stud Department in the year 1808, was aware of the unsuitability of the climate, and was desirous of removing Stud operations to a locality possessing a drier atmosphere and a soil on which an indigenous horse of good stamp might be found.

The fact, also, of the people of Bengal not being horsemen, but only accustomed to horned cattle, was against horse-breeding. These people had to be induced to follow the pursuit, and, as a rule, were frightened of horses and seldom attempted to ride them. The pecuniary inducement offered to these men to receive mares added much to the cost of rearing stock. Moorcroft was aware of this weak point, and was desirous of establishing, in some suitable spot, a colony of horse-breeders, as his experience led him to believe it would be necessary to do so. Indeed his desire was to place Stud operations in a dry climate, with a suitable soil, and amongst people fond of horse-breeding.

A copy of Moorcroft's pamphlet I hand over to the Secretary for the perusal of the members of this Institution.

6. Darwin, in his work "Animals and Plants under Domestication," Vol. I, page 53, remarks :—

"The horse can flourish under intense heat as well as under intense

cold, for he is known to come to the highest perfection, though not attaining a large size, in Arabia and Northern Africa. Much humidity is apparently more injurious to the horse than heat or cold. In the Falkland Islands horses suffer much from the dampness; and this same circumstance may perhaps partly account for the singular fact that, to the eastward of the Bay of Bengal, over an enormous and humid area, in Ava, Pegu, Siam, the Malayan Archipelago, the Loochoo Islands, and a large part of China, no full-sized horse is found."

7. In the year 1818 a Stud dépôt was established at Hapur, and afterwards (in 1843) that of Saharunpur was formed, and at a later date (in 1862) the Home Stud was created at Kurnal.

8. It is to be regretted that, when these latter dépôts were formed, those of the Central Stud in Lower Bengal were not abolished, as Stud operations would, in all probability, have been more successful as the climate and soil of Hapur and Saharunpur have proved suitable for horse-rearing, but that of Kurnal, from being situated in the neighbourhood of low lands frequently submerged by canal water, did not prove congenial to horses.

9. The operations then instituted and continued until 1876 were as follows :—

Home.

Nisfi (half) or Assamee (agent).

Zemindari.

10. The first, in buildings on Stud lands, contained stallions, mares, and their produce, till the latter was of an age fit for the army, the market, or for breeding.

11. The second, signifying partnership, consisted of mares, the property of Government, covered by its stallions and reared by the holders of the mares. Detailed particulars of this system will be found in the Final Report of the Special Stud Commissioners (1876), a copy of which I hand over to the Secretary for the perusal of the members of the United Service Institution.

12. The zemindary system consisted in Government stallions distributed in the country to serve mares the property of farmers. It existed to a very limited extent in Lower Bengal, simply because few private mares were kept by the people, their mode of conveyance being by bullock cart or by boat. In the North-Western Provinces, the people being fond of horses, a larger number was found, in some districts of good, in others of poor stamp.

13. The Assamee system was introduced in or about the year 1858 in the North-West districts, and was very properly condemned by the Stud Committee (in 1869), of which General Colin Troup, C.B., was President, "as the plan of giving out Government mares killed the zemindari ones, for all the small farmers got rid of their animals that they may obtain possession of those the property of Government."

A copy of the Report of General Colin Troup's Committee I also hand over to the Secretary for the perusal of the members of this Institution.

In section III of the Final Report of the Special Stud Commission will be found fully detailed the terms of the zemindari system in the North-West Studs, the results produced, and the state of the Stud in 1876.

14. In 1806 the abolition of the Studs, ten years after their establishment, was proposed by His Excellency the Governor-General in Council ; but it was thought better to allow more time to duly test them.

15. In 1851 a Stud Committee, presided over by Sir Walter Gilbert, was convened to report whether the Studs should be maintained or not.

16. On account of the outturn of the Stud having proved insufficient for the demands of the army, and unsatisfactory reports of the remounts supplied having been received in the year 1868-69, His Excellency the Viceroy (Earl Mayo) in Council directed that a Committee should be appointed to report on the state of the Studs. The Committee was presided over by Major-General Colin Troup, C.B., and, as will be seen from the Report, the conclusion arrived at by the Committee was that the Stud was "in a most unsatisfactory state, from the following facts :—

- (1st) The steady decrease in the number of remounts ;
- (2nd) the large proportion of unsound horses ;
- (3rd) the great number of narrow chests and twisted forelegs ; and
- (4th) the very bad results of the Stud operations, as shown by the remounts of the last year (1868)."

17. In the year 1872 His Excellency the Viceroy (Lord Northbrook) in Council ordered a Special Stud Commission to assemble with a view of re-modelling the Stud Department. The measures ordered by the Government of India to be carried out will be found detailed in the Final Report of the Commissioners.

18. Subsequently the orders were modified by the Secretary of State for India in Despatch No. 58, dated 20th March, 1873 (in reply to the Government of India Despatch No. 9, dated 10th January, 1873), wherein the Right Hon'ble the Secretary of State for India records—

"I find in the Report of the Stud Committee, presided over by Major-General Sir Colin Troup, C.B., the following startling conclusions :—

- (a) That the Stud Department is able to supply only 550 horses per annum to the Bengal army ;
- (b) that the costs of these amounts to either £148 or £219 each, according to the different modes of debiting expenditure to the Department ;
- (c) that the Government Studs have failed to produce any amelioration in the indigenous breed of horses ;
- (d) that Government interference in horse-breeding has completely paralysed private enterprise.

"It further appears in this collection that, while Government, by its breeding establishments, can only supply a troop horse at the

exorbitant price above mentioned, the open market supplies the Punjab batteries with horses from Central Asia *via* Kabul at £40 each, the Bombay army with horses from the Persian Gulf at £55 each, and the Madras army with horses from Australia at £57-10 each, though in the latter case the price is enhanced to £91 by the unwise retention of the animals purchased at the Oosoor dépôt.

"The Report of the Committee also records practices adopted in the Studs respecting the breeding and rearing of young stock, which are undoubtedly at variance with all the principles admitted as sound by practical breeders in this country. And although such practices have been repeatedly condemned by local enquiry in India, they appear to be chronic in a Government establishment.

"The question of the retention of Studs in India has been frequently raised. In 1806, ten years after their establishment, the Governor-General proposed their abolition; but the experiment was not considered to have been sufficiently tested. In 1851 a Stud Committee, presided over by Sir Walter Gilbert, was directed to consider whether the Studs should be maintained or abandoned. The Committee recommended their retention, but pointed out great past mismanagement. They considered, however, the present system capable of great improvement, which, if carried out, would render the Studs more profitable and capable of supplying a better description of cattle than at present.

"Notwithstanding the recommendation of the Stud Committee, supported as it was by the Government of India, the Court of Directors called for further information, and the Secretary of State (Sir Charles Wood) in his Despatch of 12th January, 1860, stated that it was the intention of Her Majesty's Government to keep in their own hands the ultimate decision as to the maintenance or abolition of the Government breeding Studs, and desired that no steps should be taken as to the reformation of the Stud Department until the whole question had been reported on.

"Very favorable reports* were received from India in reply to the repeated demands for information from the Court of Directors and the Secretary of State. In accordance with the Memorandum of the Government of India Sir Charles Wood thereupon, in his Despatch of the 18th October, 1860, sanctioned the retention of the Studs. It appears clearly, however, that the main ground of his decision was the satisfactory and, as it now turns out, illusory information given him as to the cost of a Stud horse. The cost of each description of horse supplied to the army was stated to be—

" Stud horse	...	...	Rs. 674-7-7 (£67).
" Cape horse	...	...	" 631-7-0 (£63).
" Australian	...	...	" 905-9-7 (£90).

* " Stud horses were stated to cost less than horses could be bought for in the market; the quality of the animal very well spoken of; and the opinion of Sir George Anson (then Commander-in-Chief) was cited as to the goodness of the stable management in the Studs."

"If the facts had been presented to my predecessor in Council, such as they now turn out to be, I cannot doubt that he would have decided that the sound principle to follow, in order to make India self-reliant in the supply of horses, is to be found in the encouragement to be afforded by Government to private enterprise and not by undertaking themselves the functions of horse-breeders.

"But, although I have arrived at the conclusion that it is inexpedient to maintain the establishment of Government Studs, I am by no means insensible to the advantages that may be obtained by judicious patronage on the part of Government.

"Various favorable breeding districts in India are to be found; amongst these the Punjab, Kathiawar, the valley of the Bheema and Mysore are pre-eminent. If in such localities well-selected stallions are furnished by Government, if agricultural exhibitions be fostered and prizes offered for promising brood mares and young stock, above all if the Government announce that they will be prepared to give liberal prices for any suitable three or four-year-old colt that presents itself, I cannot doubt that the ancient and successful practice of private horse-breeding in India would revive.

"With due notice, and by proper arrangements, a supply of 40 to 50 stallions might be obtained per annum from England of the following classes :—

- (1) Thorough-bred English ;
- (2) roadsters or trotters ;
- (3) half-breds or hunters ;

though, in reference to several remarks as to the latter class that appear in the collections before me, I may observe that not only are no such horses to be procured in the market generally but English breeders greatly prefer as sires either pure thorough-breds or pure roadsters. The facilities offered by the Government transports for conveying stallions to India *via* the Suez Canal tend considerably to diminish the price of stallions imported into India."

19. The Special Stud Commissioners completed their labors in 1876, and the recommendations made by them, regarding the future remounting and development of horse-breeding in India, will be found recorded in their Final Report.

20. On the abolition of the Stud Department the Government of India sanctioned the formation of two Departments, *viz.*, Army Remount and Horse-breeding Operations.

21. The Department of Army Remount Operations to be supplied with Australian and Persian horses purchased in the local markets and as many of country breed as procurable.

22. The Department of Horse-breeding Operations to be established on the following principles :—

- (a) The supply of Government stallions to serve gratis only carefully selected and branded mares ;

- (b) The branding to impose no claim on either side, but to be the condition of using the Government stallion ;
 - (c) The prohibition of the purchase of branded mares by the Native Cavalry or Police ;
 - (d) The liberal grant of prizes at Fairs and Horse Shows, with some slight advantages to the produce of branded mares in competing for prizes ;
 - (e) Some assistance to teach the breeders how to castrate the young stock, and to encourage the practice ;
 - (f) The ready purchase, by Government agents, at remunerative prices, of all horses fit for the service ;
 - (g) The number of stallions to be employed in the breeding districts to be, at present, fixed at three hundred.
23. The results of horse-breeding operations may be briefly stated as—
- (a) Improvements in the breed of Indian horses to an extent perhaps greater than was expected in the space of eleven years ;
 - (b) Appreciation by native horse-breeders of the principles adopted by the State in developing horse-breeding ;
 - (c) By their being desirous of rendering their mares eligible for mating with Government stallions, and readily bringing them to inspecting officers with a hope of their being approved and branded ;
 - (d) The gradual increase in the number of mares so approved and branded ;
 - (e) Producing improvement in local breeds in suitable districts throughout India ;
 - (f) Inducing natives to breed and rear more horses than heretofore ;
 - (g) Teaching breeders how to properly rear their young stock ;
 - (h) The fact that superior stock is being raised is proved by Native Cavalry Remounts bringing higher prices ;
 - (i) Horse-breeding is increasing in India ;
 - (j) The good condition of stock competing for prizes at Horse Fairs and Shows, whereby improvement in stamp is advanced ;
 - (k) The services of Government Salutris and Castrators being gradually more employed, and thus young geldings have more liberty and a better chance of developing in frame and limbs.

24. It was ordered in 1876 that the officers of the Department should be as follows :—

1 General Superintendent ;

1 Assistant Superintendent, North-Western Provinces and Rajputana ;

1 Assistant Superintendent, Punjab.

And in the year 1881 one Superintendent was appointed for the Bombay Presidency.

25. Mule-breeding operations were afterwards incorporated by the General Superintendent with the sanction of the Government of India ; and the number of donkey stallions was limited to 300. Thus horse and mule-breeding have been fostered and encouraged, and the industries have become developed in agricultural districts.

26. Government horse and donkey stallions are distributed in the most suitable districts, and are cared for in accordance with the rules laid down for the guidance of officials in charge. A copy of these Rules I hand to the Secretary for record and reference.

27. The present strength of horse stallions in the Department of Horse-breeding Operations is as follows :—

CLASSES.	Bengal Presidency.	Bombay Presidency.
Thorough-bred English	73	17
Half-bred English and Norfolk Trotters	144	15
Australian	5	1
Arab	79	67
Persian	1	0
Stad-bred	10	0
Turkoman	2	0
Total	314	100

28. The stallions best suited for Indian Stud work are English of the thorough-bred and Norfolk trotter or roadster breeds ; also the Arabs, and some of those bred in the old Stud Department have proved good stock getters ; but as the country-bred mares are generally wanting in size and light in bone of limb, the Norfolk trotter has proved the best sire for giving greater size and improving the bone of limb. In England the thorough-bred horse, when mated to mares of light bone, are found invariably to produce weedy stock ; hence it is now the custom to mate half or three-quarter-bred mares, possessing large-boned limbs, with the thorough-bred ; and in this way is good-boned stock produced.

We in India have, as above noted, only light-boned mares to breed from, and consequently it is found that the Norfolk trotter or roadster is the best stallion for such mares. The great improvement effected by the use of these sires is generally admitted, but it is thought, by some interested in horse-breeding, that the Norfolk trotter sire is being too much employed, and will cause the stock to become too coarse and heavy. These half-bred horses are really pure half-breds, and possess pedigrees of many generations ; thus we can count upon their stamping their produce in a well-marked manner. The stamp of horse represented by the Norfolk trotters, found in the Indian Stud, is one admirably suited for Horse or Field Artillery, or British Cavalry ; indeed, if those branches were horsed with and mounted on Norfolk trotter stock, selected according to the respective work required of them, it would be said that they could not

be better horsed. Therefore, by employing these stallions with the country-bred mares, we do obtain improvement in stamp, and can but hope that, by steadily continuing to employ this class of stallion, more improvement will be evidenced in every succeeding generation. It is difficult to understand how stock bred from originally under-sized and under-limbed mares by horses of weight, size, bone, and breeding, considered most suitable, can become coarser and heavier than their sires.

29. The Arab stallion, of high and pure caste, is a grand sire for producing stock with powers of endurance, but, as a rule, the produce by him out of country-bred mares is considered too small for army purposes, and therefore he is at a discount in the eyes of breeders; moreover many of the Arab horses now obtainable in the Bombay market are not of pure breed, having, more or less, Persian blood in their veins; and so, as stock getters, they are not so reliable as the pure-bred Arab.

30. Judging by the results of employing of the few Australian stallions in the Department, they are found, like the English thoroughbred, not able, as a rule, to get good-limbed produce out of country mares.

31. The following number of mares have been branded, during the years noted, in the Bengal Presidency; and at the present time there are 16,487 branded mares borne on the registers of the North-Western Provinces and Punjab :—

Years.	No. of mares branded.			
In 1876-77	3,621
In 1877-78	1,733
In 1878-79	2,099
In 1879-80	2,388
In 1880-81	1,738
In 1881-82	2,869
In 1882-83	2,221
In 1883-84	2,393
In 1884-85	1,632
In 1885-86	1,404
In 1886-87	1,019

In Bombay there are 4,705 branded mares on the register. The total number is, therefore, 21,192.

32. An annual increase in the strength of brood mares has been attained, and thereby the number of young stock bred is proportionately larger.

But the number of stallions remains 300, and it has been noted in the Annual Administration Report of 1885-86, which I place on the table for the perusal of members, that the overtaxing of the powers of the horses must not be permitted as such an error will lead to many mares going empty and stallions becoming ruined.

It is hoped that the Government of India will grasp the necessity of providing a due number of sires, or allowing, as suggested in the Annual Administration Report above alluded to, that local Governments from District Funds, in those districts where the demand for more stallions is valid, may provide the additional horses required.

33. The number of country-bred remounts purchased during the last ten years has been as follows :—

YEARS.	For British Artillery and Cavalry.	For Native Cavalry.	For Police.	Total.
1877-78	72	907	221	1,200
1878-79	88	2,307	211	2,606
1879-80	117	Returns not complete.	129	Returns not complete.
1880-81	30	1,704	145	1,879
1881-82	39	755	100	894
1882-83	60	1,659	88	1,807
1883-84	128	1,196	72	1,396
1884-85	180	1,176	65	1,371
1885-86	117	3,239	54	3,410
1886-87	Returns	not yet	received.	

34. As horse-breeding operations develop in India so will the number of available and suitable country-bred horses increase; and it may be hoped that, by Government steadily adopting the principles laid down in connection with the fostering of Indian horse-breeding, by the providing of good stallions, awarding money prizes and medals to the owners of the best of country-bred stock by Government stallions out of approved and branded mares, and purchasing all stock suitable as remounts at remunerative prices, in the course of a few years a sufficiency of Indian-bred horses, for requirements of the State and public, will be obtained, and thereby the money spent in the purchasing of horse stock will be retained in the country, and not, as now chiefly obtains, taken by importers to Australia and the Persian Gulf districts.

35. A reference to the Annual Administration Reports of the Department of Horse-breeding Operations and those on horse fairs and shows, during the last ten years, will allow of the opinion being arrived at, that the breed of country horses under the present *régime* is steadily improving. Remount purchasing officers of Bengal and Punjab Cavalry generally admit that horses of an improved stamp are now being obtained, and the Government Remount Agents have recorded their opinion that the improvement in breed of horses found at fairs and shows in the North-Western Provinces and Punjab is marked.

36. It is thus shown that the stamp of horses in India has much improved, and it may be expected that, if the Government steadily continue fostering and encouraging horse and mule-breeding, in time all horses required by the State and public will be obtainable in the local markets.

37. When Moorcroft wrote his report, about 1810, to the Hon'ble Company, he recorded how desirous he was to find countries containing indigenous horses and horsemen, so that he might remove Stud operations from Lower Bengal, to place them in a more suitable climate, and to have horsemen to work them. We, nowadays, have at our disposal many breeds of indigenous horse stock, on which improvement is being effected.

The following list gives the several breeds now recognised :—

Mahratta.	Punjab.
Deccani and Bhimtari.	Dhunni.
Kathiawar.	Hazara.
Marwar.	Sind.
Bikanir.	Cutch.
Meywar.	Biluchistan.
	Burmah (ponies).

All possessing good powers of endurance, and showing thereby *blood*, but generally wanting in size, and many too small for the work of the Indian army, constituted as it now is ; still some of pure local breeds can be found fit for Native Cavalry.

38. In history we read of the hordes of Mahratta Cavalry, but we must think of them as very small and light men on active gallows and ponies. Again, we know that, in the Punjab, under Sikh rule, Runjit Singh's Cavalry were mounted on good horses, more especially the Khalsa Horse. Thus we have now at our disposal good fields for horse-breeding, in suitable climates, and populated with natives, horsemen, and lovers of the horse, and who readily follow horse-breeding as an agricultural occupation ; and they are generally delighted to have the services of the Government stallions for their mares, and thus, as an agricultural industry, the breeding of horse stock is spreading.

39. In the course of 11 years we find that the Native Cavalry are now as well mounted on district-bred and reared horses as the British Cavalry were some 15 or 20 years ago when mounted from the Stud Department. Again, the country-bred horses obtained for British Cavalry and Artillery have been reported on favorably ; and those purchased at the early age of 18 months to two years, and reared on the Babugarh Depot Farm, are found to be in size, weight and limb equal to the ordinary Australian remount.

40. Time is required to produce any great change in horse stock, and this will be acknowledged when we remember that the period of gestation in mares is 11 months and that the young stock do not become adult until five years of age. Eleven years only have elapsed since the inaugurating of the present Department of Horse-breeding, and it must be allowed that the results obtained, as above indicated, are satisfactory.

41. By Government steadily supporting the horse and mule-breeding industries on the sound lines laid down in 1876, doubtless, in time, all horses required by the army will be found available in India.

42. It is said that native breeders and dealers cannot, and will not, give liberty to their young stock ; and it must be admitted that, as a rule, sufficient liberty is not given ; but it is pleasing to find that the old practice of very tight hobbling and tethering, which was common and in some horse-stealing districts necessary, even to the extent of padlocking the fore feet together, is on the wane, as can be noticed by the comparative absence of fore and hind rope marks on the young stock. Again, some of the richer breeders have provided runs for their young stock ; some of these paddocks are of small size, still these facts prove that the breeders are becoming aware that tethering and hobbling prevent due development of the young horse, and reduce his value in the market.

43. Some of the officers I have the pleasure of addressing may remember the stamp of horse usually found in the ranks of the old Irregular Cavalry. They were certainly good representatives of the results of maltreatment in rearing : deformed legs and narrow chests were common. In the ranks of the Native Cavalry of the present day very superior horses are found, and these have been bred and reared by the native breeders and dealers. Surely it must be allowed that both classes are gradually becoming cognisant of the necessity of not hobbling and heel-roping to the extent of producing malformed limbs.

44. It is true that but few remounts for the British Cavalry and Artillery have been purchased in the local markets and that the Army Remount Department is chiefly dependent upon Australian and Persian importations, but many of the horses bought for Native Cavalry are quite fit for British Cavalry ; therefore it must be admitted that the number reported as obtained for the European branches of the service represents that secured, not that really available.

45. It may be hoped that a larger number of country-bred horses will be purchased by the Army Remount Department in order that the higher prices given may act as encouragement to breeders. Many breeders have expressed themselves disappointed at their young horses not having been purchased by Army Remount Agents.

46. Of late years there has been a tendency to raise the standard of height in the Bengal and Punjab Cavalry. Assuredly the smaller horses, from 14-1 to 14-3, are the best for tropical work, and these can be found in greater number than the taller horses. The latter lose in substance of leg, and size of barrel, and powers of endurance, in proportion to the increase of their height. They do not prove so hardy on field service as the smaller. The war horse should be of that build, size and breed that he will continue at work and carry his rider at a charge at the end of a forced march when being fed on short commons. The smaller horses will do all this ; the taller will not.

47. Recently proposals have been made for Native Cavalry regiments to have extensive runs for the breeding and rearing of horses. Those advocating such measures cannot have had practical experience with regard to the subject. Horse-breeding is a lottery. Horse-rearing is a business that requires practical knowledge. Many breeders in India

are ready to sell their foals, from 6 to 12 months of age, at a remunerative but small price, because they know they cannot tell how the colt or filly will prove. The purchaser has to run the risk of the youngster becoming affected with infantile diseases, and perhaps permanently weakened thereby; so would the chances of breeding and rearing have to be experienced on the runs proposed. When many young horses are collected together one of the diseases they are subject to, *viz.*, strangles, is liable to assume a severe and malignant type and cause heavy mortality. Indeed, the losses that may be expected to entail from mortality, casualties and animals proving unfit would cause the cost of those issued to regiments to become so high as to prove the experiment a failure. Horse-breeding and rearing, as an industry by itself, will never pay unless on good pasture lands held at a very low rentage. In countries where such lands are not available horse-breeding and rearing must be associated with other agricultural pursuits, so that the dams may, when breeding, do good work, whereby profit in other ways may be reaped on the farm.

48. Estimates may be prepared to show how remunerative horse-breeding and rearing in India can be made by describing lines pleasing to the unpractical reader, but unless measures, as above noted, can be employed with respect to the obtaining of good pasture lands at a nominal rentage, and the working of the dam stock at co-operative farming industries, failure must result.

49. It has been declared that remounts for Native Cavalry are not obtainable at suitable ages and sanctioned rates. A reply to this statement can be given by the following returns of Native Cavalry remounts purchased during the last three years :—

Years.	Corps.	Yearlings.	2 years.	3 years.	4 years.	5 years.	6 years and over.	Total.
1884-85 ...	Native Cavalry...	...	24	396	430	200	126	1,176
„ ...	Remount Department ...	...	69	47	9	3	2	130
„ ...	Police ...	...	...	18	32	7	8	65
1885-86 ...	Native Cavalry	1	133	1,085	935	553	532	3,239
„ ...	Remount Department ...	43	48	21	3	...	2	117
„ ...	Police ...	...	2	18	16	9	9	54
1886-87 ...	Native Cavalry	...	40	125	80	44	39	*328
„ ...	Remount Department ...	Returns not yet received.						
„ ...	Police ...	Returns not yet received.						

It will, therefore, be observed that the horses required have been obtained and that an extraordinary demand was made for Native Cavalry

* This number was purchased by nine regiments of Native Cavalry. The returns of the remaining regiments have not yet been received.

remounts during 1885-86. It might have been expected that in the year following the extra demand upon the market the supply would not be sufficient; still the Native Cavalry Purchasing Committee in the North-Western Provinces obtained in 1886-87 the complement required. The Purchasing Committee for Native Cavalry remounts in the Punjab were not successful, but the causes in operation are being enquired into: it is believed that the horses wanted will yet be obtained.

50. Instead of Government listening to the recommendations for horse runs for the Native Cavalry, it will be a wiser and safer plan to offer better prices for the stock required. The sanctioned price of Rs. 200 was doubtless ample for the old class of Irregular Cavalry remounts kept, but the Native Cavalry of the present day are no longer irregular, and are mounted on superior horses, for which they have to pay a superior price. Again, irrespective of the improvement in breed, doubtless, price of horse stock has, during the last few years, risen in the market, so it may be hoped that Government will take the subject of raising the sanctioned price into consideration.

51. It was the fact of higher prices being paid for Native Cavalry remounts that caused the Government of India to institute the purchasing by Committees for the Bengal and Punjab Corps so as to prevent regiments competing with each other at fairs and shows, and thus, as it was thought, keeping up the price. Doubtless many horses that would have been purchased under the old regimental purchasing system have been refused by Committees, and in the aggregate a better lot of remounts has been secured; but the prices have been, more or less, maintained.

52. By a recent ruling of the Government of India His Excellency the Commander-in-Chief was requested to appoint an officer on the Purchasing Committees to buy any horses suitable for British Cavalry and Artillery. But unfortunately an officer was not appointed, and thus, I feel assured, remounts fit for British Cavalry and Artillery were not secured. Much good would be derived by having an officer of British Cavalry or Artillery on the Committee, as breeders and dealers in possession of superior stock would then be glad to bring their animals forward with the hope of obtaining proper prices for them, whereas such owners avoid the Committee as they know they will not get the value of their stock.

53. The Native Cavalry of India have gained a world-wide fame; they have proved themselves equal to numerous campaigns; they have been made use of as the Uhlans of the columns to which they are attached; and they have done right good service in battle. The names of the engagements emblazoned on their regimental colors and the medals on the breasts of their soldiers have been earned by the good work their horses have allowed them to perform. Truly it can be declared that the Indian Native Cavalry are fit for service in any part of the world and in all extremes of climate; this cannot be said of the Cavalry of any other State or country. It can be

also safely averred that the cost of their horses is less than that of any other Cavalry, and this may still be said even when the sanctioned price becomes enhanced.

54. The Government have wisely adopted measures to improve the horse stock of India and cause the mounted branches of the Indian army to be well horsed. Surely it is in the interests of Government to allow the Native Cavalry to be mounted on the superior horses now obtainable in the market. These improved horses are worth a higher price, and, in obedience to the law of demand and supply, unless a superior price is paid for a superior article, the latter will no longer be found in the market. It cannot be too strongly urged, as laid down for guidance in the Right Hon'ble the Secretary of State's Despatch above quoted, that to foster and encourage horse-breeding in India remunerative prices must be paid for army remounts.

55. It has to be noted that castration of colts is becoming more popular; thus the young horses have not to be so tightly hobbled and tethered, and are, at times, let loose with the filly stock. Salutris and Castrators, under the Horse-breeding Department, are distributed in breeding districts, and owners can have their colts castrated gratis. At first objections were raised to castrating, but as owners find the geldings are so easily managed and reared, and that they realise as good, if not better, prices in the market, the services of the Salutris are becoming more in demand. In the year 1885-86 the number of colts castrated by the Salutris of the Department was 1,138 in the North-Western Provinces and Punjab, and 122 in the Bombay Presidency.

56. It may be safely asserted that, provided Government will steadily continue to foster and encourage horse-breeding on the sound lines laid down, *viz.*, (a) the granting of a due supply of stallions, and (b) directing that all country-bred horses, fit for the several branches, be bought, and thus the buying of imported stock may become gradually reduced, so that the money spent by the State in horse purchasing may go into the pockets of the Indian horse-breeders, it will be surely found that India will, in due time, provide all horses required by the State and public, and of a stamp possessed of size, power and enduring qualities.

57. The soil and climate able to produce the wonderful polo ponies of India will certainly yield as good horses, provided breeders and rearers of horse stock find the industry remunerative.

58. The fact of horse stock not being used for agricultural work in India is a loss to the horse-breeding industry; but the employment of a very useful stamp of galloway and pony in ekkas in Northern India does promote the breeding of a valuable class of animals for mounted infantry and transport work. Mares have been, for the last five or six years, employed for farm work at the depôt, Babugarh, to show native farmers that mares can perform agricultural work and are more remunerative than bullocks, as the latter do not yield produce, but the former do, as horse or mule-breeders.

59. Horse-breeding, in this paper, has been considered mainly with regard to State requirements; and as the Government are most desirous to have a home supply of horse stock, they must not only say they are prepared to foster and encourage the industry but they must take care that the fostering and encouraging is practically carried out by the purchasing, at remunerative prices, of every head of country-bred stock fit for one or other branch of the service; and in this way pecuniarily give encouragement. The same action should be adopted as regards the buying of mules.

60. An ample supply of both horses and mules will, in time, be available in India if the demand, based upon the lines indicated, be steadily made. Indian-bred horses and mules will prove better and less expensive for Indian service than imported stock.

61. The cost of the Horse-breeding Department in India may be truly said to be most inexpensive compared to the amounts required on the Continent of Europe by the States below shown, extracted from Reports of Her Majesty's Diplomatic Agents at Paris, Vienna and Berlin :—

France	...	...	£ 269,720 per annum.
Austria	...	...	£ 140,000 per annum.
Germany	...	...	£ 80,000 per annum.

Budget Estimate for 1887-88 of the Department of Horse-breeding Operations in Bengal is Rs. 2,08,760, or, in sterling, about £16,000. In the Bombay Presidency, during 1885-86, the expenditure amounted to Rs. 57,000, or, in sterling, a little over £4,000. With the growth of horse and mule-breeding there must be a proportionate increase in stallion power.

GENERAL CHAPMAN opened the discussion on the above lecture with the following remarks :—

Mr. Hallen is hopeful that, in the course of a few years, a sufficiency of Indian-bred horses for the requirements of the State and the public will be obtained, and thereby the money spent in purchasing stock will be retained in this country and not, as now, taken by importers to Australia and the Persian Gulf districts. I cannot say that I am as sanguine as Mr. Hallen is in this respect. The increasing demand for horses in India is, in my opinion, likely to outstrip the development of our breeding operations unless they are expanded far beyond the limit authorised in the recommendations that are now before the Government. The increasing wealth of the native population and their advance in the appreciation of luxuries is apparent in every one of our native cities. The demand for horses is everywhere steadily increasing, and the amount of young stock drafted from our breeding grounds to Native States is considerable. The establishment of Stud farms under Government supervision was rightly abandoned as being a method of obtaining horses which was too expensive and also tending to check native enterprise in the matter of horse-breeding which it is so desirable to encourage. But I hardly think we realise sufficiently the rapid strides which India has been

making during the last 20 years. However forward the policy of the Government may be in regard to railway extension and other public works it cannot, in my opinion, keep pace with the requirements of the rapidly increasing demands of British India. There is a tendency to rest satisfied because we are doing a great deal more than was done 20 years ago, but 20 years ago existing circumstances in the life of the native population were never dreamt of, and in all departments of the State the fear is that rigid financial restrictions and the annual balance of the Budget must prevent us from doing enough. In regard to horse-breeding operations I myself think there is room for the encouragement of small Stud farms as well as for the extension of the zemindar system. Mr. Hallen has given it as his opinion that Native Cavalry cannot afford to undertake the rearing of horses, and that, as an industry standing alone, horse-breeding and horse-rearing can never pay except on good pasturage lands held at a very low rental; that, in fact, horse-breeding and rearing must be associated with other agricultural pursuits. I am sorry that there is no officer here representing the 11th Bengal Lancers to tell us something regarding the operations at Probynabad. I think the regiment attach great value to the farm, and I hope I am right in saying that they regard it as a profitable speculation. The best of their young four-year-olds will fetch something like Rs. 500 in the open market, and by the sale of a certain number they can reduce the cost of the remainder. I think we need to extend the farm system, and I should be glad to hear of other Cavalry regiments having such farms as that of Probynabad. Why should not horse-breeding in such farms be associated with other agricultural pursuits? I am sorry to differ from the lecturer in regard to this point. I cannot think it has anything to do with the question of increasing the price given for Cavalry remounts. The price must be increased as the market value of horses rises.

What I really want to point out is that the official mind grasps with difficulty the extraordinary number of horses and mules that must be needed for war purposes during the course of the next few years if we are to enter upon the struggle which most of us anticipate, and that in this matter of horse-breeding and mule-breeding it is not sufficient for Government to stand alone in making efforts to obtain a more certain supply of the animals, upon which our success in war must depend. Every individual officer, whether he be in the command of a Cavalry regiment or in a humbler sphere, with other branches of the service, is directly interested in promoting the extension of horse and mule-breeding in India. No civilian at the head of a district, or working in a subordinate position, can fail to see the advantage of this important industry. It is not sufficient to leave the question entirely to the Government to be dealt with by a Department. Each of us, soldiers and civilians, can do something to advance the matter. As a first step to so doing we need to know more of the subject than most of us can profess to do, and we have to be specially grateful to Mr. Hallen for having put forward the information his lecture contains. I hope

that it may be read and thought over by a large number of officers in the army, and that the discussion of some of the points which he has raised may be of value to the Government for further consideration of the question of horse and mule-breeding.

Colonel Lance said : I have been asked to take part in this discussion on very short notice, and as there are many points that have been raised by Mr. Hallen, which I have no doubt could be more ably discussed by others than myself, I propose to confine my remarks to the results of the Horse-breeding Department with reference to the Native Cavalry. I remember some twelve years ago Sir Frederick Haines asking me on parade whether we got remounts easily, and I replied that there was great difficulty and the quality was inferior. Our present Commander-in-Chief remarked to me that he had very often heard that answer given before, but during all the years he had seen Native Cavalry regiments every year they were better mounted than the year before. If that was true some time ago it is much more true now, and for that we may thank the Horse-breeding Department. I have heard it argued that Native Cavalry need not be mounted as well as they are, and that the work done by the Irregular Cavalry in former days, when mounted on such horses as Mr. Hallen has described to us, was as good as would be required of them now. I think the memory of these *laudatores tempora acti* must have been rather deficient, or perhaps in their young days they took a different view from what they did later in life. That we have increased in efficiency must be acknowledged, but we must be very much more efficient before we are satisfied with ourselves ; and that we may become so we must look to Mr. Hallen and his Department to assist us. The Horse-breeding Operations Department is only 11 years old, and it was born among very bitter controversies and strifes, and whatever are the merits or demerits of the present system it must be allowed that it has put within our reach a much better class of horses than was procurable before under any other system. It now behoves officers of Cavalry to influence those who have the power of the purse strings to give more money to assist Mr. Hallen in the operations of his Department. Mr. Hallen has not told us entirely the system upon which he has been acting, but the general system I think has been to select a few districts considered favorable for horse-breeding operations, for the good quality of the native breed, or other considerations, and encouraging breeders there by visits from officers of the Department, by spending large sums of money in offering prizes, and, more than all, by supplying to the full requirements of these districts the very excellent and costly stallions the Department has at its disposal. The Dera Ghazi Khan district is one of the districts that I have described. Twenty years ago a native fair was held at Pir Adil near Dera Ghazi Khan, at which the Cavalry regiment stationed there thought itself fortunate if it got three or four remounts. The fair now is considered one of the best for getting remounts, and supplies as good horses for Cavalry as any place in India. I was myself the President of

the Judging Committee, for four consecutive years, for giving awards, and it was interesting to mark each year the improvement in the stock presented for prizes. Of course this is entirely due to the efforts of the Horse-breeding Department ; but, while there are a few such districts in the Punjab, still there are others which are in utter darkness, and I think the great thing now is to try and induce the Department to extend its operations to these districts. The Bannu district is one of those to which I refer. For many years there were three or four stallions kept up there under the old system by the Government, the services of which were given gratis, and they gradually drove out the indigenous stallions. Within the last few years, however, these Government stallions have died out and have not been replaced, and the people fairly complain of what they consider almost a breach of faith on the part of the Government because now they say they have nothing but ponies or inferior country-bred horses to breed from. It behoves every officer interested in Native Cavalry to help Mr. Hallen to get more money to introduce his operations into these districts. Though he could not possibly supply these districts with the excellent stallions that have been supplied to the more favored districts that I first described, yet I believe sufficiently good stallions could be procured from districts like Dera Ghazi Khan that would be of great service. At any rate they would be very much better than anything the people have now. I think I have shown that the extension of the Department is necessary, and that it is still in its infancy and requires more support and careful nursing ; especially it requires more nurseries and also possibly more nurses.

Colonel Ben Williams said : Gentlemen,—I have been asked without any warning to get up and talk on the subject of horse-breeding and rearing. I am sorry to say I must differ from Mr. Hallen on one or two points with regard to the necessity of having rearing depôts. I think the officers of the Bengal and Punjab Cavalry regiments here will agree with what Colonel Lance has just said as to the superiority of the country-bred horse, that he has increased in numbers, and is of a better description, and has arrived now almost at perfection for the Native Cavalry. But there is one point on which I must disagree with the remarks you have heard, and that is with regard to the rearing of horses. I am of opinion that, to obtain good horses for the Department which I am in charge of, it is absolutely necessary to rear the horses ourselves and not leave them to native breeders. When they rear them they stall-feed them and fatten them up in such a way that when they are three or four years old their form is marred and their action spoiled. They have not the means of rearing them in the way Government can. Their great idea is to get rid of a horse in its youth. Dealers and other people are always after them trying to buy their produce and offer them large prices, often larger than we can afford to give. I suppose two-thirds of the horses brought to fairs are under four years of age. These are sold quickly enough, and the older ones always show

signs of deterioration ; first of all, by unsoundness, and, secondly, by crooked legs. Want of action is one of the greatest faults. This is brought about by their being tied up and fed until they are made over to the dealers. Dealers are everywhere over the country. They hover about every fair, and offer prices for young stock, and buy them as yearlings or eight months old. They were carried away to Native States and sold in the great towns. They were taken away where we could not get them. Formerly it was the order of Government that one hundred young stock were to be purchased every year, and these were got readily enough. Full-grown remounts were difficult to obtain because they were not procurable at fairs. This year he had induced the Government to give him leave to purchase 200 young stock. During the last year we had been able to purchase in the open market only 126 full-grown remounts. This year the number was very small again. During the last six months they had been able to send into the services from the depôt 101 remounts. As Mr. Hallen has remarked the animals bred by his Department compare very favorably with walers. I think every credit should be given to the Department for Horse-breeding Operations. Mr. Hallen and those under him are now breeding and producing better horses than we have ever had before in India.

Major T. Deane said : General Chapman and Gentlemen,—I did not come here prepared to make any remarks on the Horse-breeding Department, which has been so interestingly referred to by Mr. Hallen, Colonel Lance and Colonel Williams. I think, however, it would be well to make a few remarks on the policy of Government in the matter in so far as the British mounted branch of the service is concerned. Government is, I believe, desirous of helping Mr. Hallen's Department to the utmost. The number of stallions in the Department now is about 314. I quite agree with what General Chapman has said, that the growth of wealth and prosperity in India has necessitated, or should necessitate, the increase of the Department for Horse-breeding Operations in the purchase of more stallions. Mr. Hallen has told you what the money spent upon the Continent is. In India very little indeed is spent. India is a poor country, and money is not always forthcoming. We can only hope that when it is forthcoming, sooner or later, one of the first directions in which more funds will be made available will be in the Department for Horse-breeding Operations. With regard to the way in which Government try to secure country-bred horses for the British branches of the army, I would say that the order, as it stands in a notification which is published in all the newspapers in India, is that as many full-grown country-bred horses as are procurable should be purchased, and now 200 young stock per annum. There has been a good deal of discussion as to whether Government should purchase country-bred horses young or old. On the one hand we hear that full-grown country-bred horses, that is to say, remounts of four years old, are not obtainable. On the other hand we hear that

plenty are obtainable and are not bought. The action of Government in the matter is clearly to cover both parts of the question. That is to say, if full-grown country-bred horses are obtainable, they ought to be bought. If not, then, as an experimental measure, Government has sanctioned the purchase of 200 young stock. I have seen these young horses, and the result of running about for hours on the Government farm, and being fed on the farm produce, is most satisfactory. Most of these horses are probably from one to two years old, and at $4\frac{1}{2}$ years old they are drafted into the ranks of the Government service. The horses reared under these conditions are in many respects not inferior to walers. It was only the other day that I was favored by General Greaves with an opportunity of seeing the horses of the 8th Hussars. They are mounted almost exclusively on Persian and country-bred horses. In going round the ranks of the horses the thing that attracted notice was the magnificent shape and conformation of the country-bred horses, and on enquiring where they came from I was told that they had recently been drafted from the dépôt. I have seen also reports from officers in the Bombay Presidency to whom these country-bred horses have been drafted. In one case the opinion of an officer was that they were in no way inferior to walers of the present day. No greater praise could be given to the Department than that because it is generally admitted that Cavalry mounted on waler horses are the best mounted in the world. When the country-bred is compared to the waler we may be sure the country-bred is making considerable progress.

Mr. Oliphant, Inspecting Veterinary Surgeon, said : Having had an opportunity for many years of inspecting the Cavalry remounts in Bengal and the Punjab and the British services, I can say that a great improvement has taken place in the last few years. With regard to the question of runs, I agree with Mr. Hallen that horse-breeding will not pay; but with regard to runs I disagree with him. I do not think the native, for many years to come, will bring up young stock in the way it ought to be brought up. Liberty he will not give it, and it even gets insufficient food. I think Mr. Hallen has rather overstated the risk that follows from disease. Under the old arrangements sickness was rife, and the results of strangles were frightful; but with fresh air and better food the risk is not so great. In talking of runs some people think they have nothing to do but to turn stock loose to pick up their living. I have never in India seen a place where horses could pick up a living as they do in Australia. Food must always be provided, and, therefore, a run can never be kept without some expense. Breeding, therefore, must be left to natives, but whether they will rear their stock properly I very much doubt.

Colonel Lance, apologising for speaking a second time, referred to the Stud farm of the 11th Bengal Lancers mentioned by General Chapman. The farm, he said, was started under most favorable conditions, the troops having just returned from China with a fund of

Rs. 40,000, which had been deducted from their pay. The losses in horses had also all been made good. Under ordinary circumstances Native Cavalry regiments could not rear horses without assistance from Government. The Government would have to give ground and make advances for ten years to be paid back in another ten. In this way it could be done, but if the money were given to Mr. Hallen perhaps he could produce better results.

General Chapman said that he was aware of the favorable circumstances under which the Bengal Lancers started their farm ; still he thought if the Government could make advances to regiments good results would follow.

Mr. Hallen then replied to some of the remarks made, especially with reference to carrying Stud farms too far lest they should check private enterprise. Natives had capability enough to rear horses properly if they found it paid.

General Chapman said it only remained for him to thank Mr. Hallen for his interesting lecture and congratulate him on the evident sympathy felt for him. He thought horse-breeding operations might be extended without limit, and the Government would always get its money back. The great mistake was in hesitating to "put the money on."

The meeting then separated.

THE AUSTRO-HUNGARIAN ARMY.

Translated from the French of Lieut.-Col. A. Dalby, Commanding 98th Regiment, Territorial Infantry.

By MAJOR E. R. ELLES, R.A., A.-Q.-M.-G.

GENERAL ORGANISATION.

THE total of the military forces of the Austro-Hungarian Empire include, in addition to the standing army, the Cis-Leithanian "Landwehr," furnished by the countries represented in the Reichsrath and Hungarian or Honvel "Landwehr." The three parts of the national forces are administered by three different ministers, *viz.* :—

The Minister for War.

The Minister of Cis-Leithanian National Defence.

The Minister for Hungarian National Defence.

They are, too, maintained on three different budgets, voted respectively by the delegates, by the Reichsrath of Vienna and by the Reichstag of Keith.

This complexity of military organisation is a reflex of the complexity of the political institutions of the Empire. The whole of these forces have the Emperor for Commander-in-Chief. The army is formed in fifteen army corps, and in addition there is the military command at Zara in Dalmatia. The army corps are extended to form three armies, one of which has five and the other two four army corps each.

Each army corps has two divisions of the active army and one division of Cis-Leithanian or Hungarian Landwehr. The army corps is commanded by a "Feldzeugmeister" or a General of Cavalry.

The two army corps not employed in the formation of armies are the 14th, specially entrusted with the defence of the Tyrol, and organised for mountain warfare; it is formed of one division of the active army and one division of "Landesschützen." The 15th corps and the troops of the Zara military command have for their mission the guarding of Bosnia, Herzegovina and Dalmatia.

The troops remaining available after the mobilisation of the 15th army corps and of the Zara military command are employed in garrison duty and the defence of fortified places.

The organisation of the army is based on 36 infantry divisions; but in time of peace the 20th, 21st, 22nd, 23rd and 26th do not exist, and are not formed until the time of mobilisation from the Cis-Leithanian or Hungarian Landwehr. Twelve new divisions should be further formed in case of general mobilisation, namely, two from the troops of the active army, six from the Hungarian and five from the Cis-Leithanian Landwehr, and one with the Landesschützen of the Tyrol and the Voralberg. This brings the number of infantry divisions up to 48.

The infantry divisions are commanded by a Lieutenant Field Marshal.

The cavalry are formed in brigades of two regiments, attached to army corps, and in five independent cavalry divisions, one of which is of Hungarian Landwehr. These divisions have two brigades.

Consequently on mobilisation the sum total of the Austro-Hungarian army consists of 48 infantry divisions, 39 of which form the first 13 corps constituting the three armies, 5 are specially attached to the 14th and 5th army corps, and 4 remain available for occupying garrisons and fortified places.

According to the then composition brigades are called infantry, cavalry or mountain brigades, and are commanded by a Major-General.

The army has 62 brigades of infantry (on peace footing), 21 brigades of cavalry, two of which are only formed on mobilisation, six mountain brigades and one garrison brigade.

Brigades of infantry should normally consist of seven battalions, but many have more or less ; all cavalry brigades have two regiments except three, which have three. Mountain brigades generally have four battalions of infantry and a battery of mountain artillery.

The artillery regiments are not brigade. From a recruiting point of view the Austro-Hungarian Empire is divided into 106 recruiting circles, 103 being for the land forces and 3 for the navy. Each army recruiting circle is attached to an infantry regiment and to the Tyrolian Rifles. With regard to the other arms their quota of recruits is furnished by one or several recruiting circles detailed for the purpose.

This method of recruiting produces the following results :—

	Cis-Leithan.	Hungary.	Total.
Regiments of Infantry ...	... 55	47	102
Battalions of Rifles ...	... 32	8	40
Cavalry { Dragoons ...	... 14	0	41
{ Hussars ...	... 0	16	
{ Uhlans ...	... 9	2	
Regiments, Field Artillery	... 7	6	13
Battalions, Garrison Artillery	... 9	3	12
Ditto of Engineers	... 8	2	10
Ditto of Pioneers...	... 3	2	5
Divisions of Train ...	... 7	8	15

Troops for the sanitary, clothing and supply services, &c., are furnished from the whole Empire.

REGIMENTAL ORGANISATION.

Infantry.

The Austro-Hungarian Infantry consists of—

- 102 Regiments of Infantry.
- 1 Regiment of Tyrolian Rifles.
- 40 Regiments of Rifles.

The Regiment of Tyrolian Rifles consist of—

- 1 Regimental Staff.
- 12 Battalion Staffs (2 of Dépôt).
- 40 Companies forming 10 Service Battalions.
- 10 Companies forming 2 Dépôt Battalions, giving an effective total of—
- 270 Officers.
- 12,057 Men.
- 350 Horses.
- 160 Vehicles.

The Service Company is composed as under :—

Officers	4	} 236
Under-Officers	...	...	7
Corporals and Lance-Corporals	...	...	34
Buglers	...	...	4
Riflemen	...	...	180
Pioneers	...	...	4
Drivers	...	...	3
Officers' Bâtmén	4	

Each service battalion of the rifles of the line has a strength of —

- 26 Officers.
- 1,203 Men.
- 34 Horses.
- 16 Vehicles.

Consequently the whole corps of rifles gives—

- 1,310 Officers.
- 60,177 Men.
- 1,710 Horses.
- 800 Vehicles.

The regiment of infantry consist of four battalions of four companies each, numbered from 1 to 16, and in addition a dépôt battalion of four companies.

On a war footing the company of infantry consists of—

Officers	4	} 232
Under-Officers	...	...	7
Corporals and Lance-Corporals	...	...	30
Privates	...	...	180
Drummers and Buglers	...	...	4
Pioneers	...	...	4
Drivers	...	...	3
Officers' Bâtmén	4	

With its staff the battalion has a strength of 20 officers, 935 men.

The strength of the regiment is—

			Horses.			
			Officers.	Men.	Riding.	Draught. Vehicles.
Staff	...	...	4	81	14	
4 Service Battalions	...	...	80	3,740	32	
Depôt Battalions	...	...	21	911	3	
Staff Sections	...	...		30		
Trains	...	...		48		80 34
Total	...	...	105	4,810	49	80 34

The four staff sections maintained by the four regiments of the same division are intended to be united with one staff company, bearing the number of the division.

The infantry then furnish a form of strength as under :—

		Officers.		Men.
Service Troops	...	102 Regiments	...	8,568
	...	102 Staff Sections	...	3,060
	...	10 Tyrolian Battalions	...	226
	...	40 Rifle Battalions	...	880
		Total	...	9,674
Depôt Troops	...	102 Infantry Battalions	...	2,142
	...	2 Tyrolian Battalions	...	44
	...	40 Rifle Companies	...	160
		Total	...	2,346
				102,550

The two national armies, the Cis-Leithan and Hungarian Landwehr, have to furnish the divisions intended to take their place in the field army side by side with the divisions of the active army, as will be seen further on.

Cavalry.

The Austro-Hungarian cavalry consists of 41 regiments, viz. :—

14	Regiments of Dragoons.
16	" Hussars.
11	" Uhlans.

Each regiment on a peace footing comprises —

- 1 Staff of Regiment.
- 2 Staffs of Divisions (of 3 squadrons each).
- 6 Service Squadrons.
- 1 Depôt Cadre intended in case of mobilisation to form—
 - (a.) 1 Reserve Squadron.
 - (b.) 1 Depôt Squadron.
 - (c.) 2 Escort Sections.

These 41 regiments are allotted to 20 brigades of two regiments each except the Vienna brigade, which has three.

In each regiment there is a pioneer section, which receives special technical instruction. In addition five men per squadron have pioneer tools, one pick, two shovels, one axe and one hatchet.

The equipment and harness are uniform in all cavalry regiments.

The cavalry (except orderlies and two men of the pioneer section, who lead pack horses, who have the pioneer sabre) is armed with the cavalry sabre and the Werndl Carbine. Drivers and men of the escort section have no carbine.

The officers and under-officers are armed with the revolver, as are also the men of the escort section and the dismounted men of the pioneer section.

The carbines are supplied with 50 rounds and the revolvers with 30.

The service squadrons of cavalry regiments serve to form independent cavalry divisions and brigades attached to army corps.

The reserve squadrons are employed either with the army corps, or on the lines of communication or in garrisons.

The escort cavalry is intended for use with head-quarters and with the supply departments.

The staff of a cavalry regiment consists of—

Officers	...	...	...	7
Men	...	...	...	74
Horses	...	...	...	102

amongst whom are included the pioneer section.

The staff of a division (3 squadrons) of a regiment consists of—

Officers	...	...	...	2
Men	...	...	...	3
Horses	...	...	...	6

Each squadron on a war strength has—

Officers	...	...	...	5
Men	...	...	...	166
Horses	...	...	...	161

A reserve squadron has—

Officers	...	...	...	6
Men	...	...	...	171
Horses	...	...	...	169

The dépôt squadron has the same strength as the service squadron, but in addition 1 paymaster lieutenant, 1 surgeon, 1 veterinary surgeon, 1 clerk and 2 orderlies.

The two escort sections furnished by each cavalry regiment each comprise—

Officer	...	...	...	1
Men	...	...	...	43
Horses	...	...	...	42

Cavalry regiments have also to furnish a certain number of field police, fixed at 1 subaltern and 12 under-officers.

The train of a regiment consists of—

32 Vehicles.

80 Horses.

The total strength of the 41 cavalry regiments is—

Officers	...	...	...	2,337
Men	...	...	...	61,582
Horses	...	...	...	61,295
Vehicles	...	...	...	1,312
Draught Horses	...	...	...	3,280

Artillery.

The artillery consists of—

Field artillery.

Fortress artillery.

Technical artillery, specially attached to the artillery establishments.

The field artillery consists of 13 regiments; 5 regiments consist of—

2 Horse Artillery.

2 Light Field of 8 cm. guns.

11 Heavy Field of 9 cm. guns.

1 Depôt Battery.

Eight regiments have—

13 Heavy Field.

2 Light Field.

1 Depôt Battery.

The field batteries are of 8 guns and horse artillery of 6.

The horse artillery are grounded in two batteries, and form the artillery of the independent cavalry divisions.

The field batteries, heavy and light, are formed into divisions of two batteries, and are distributed to the army corps and infantry divisions *

The fortress artillery consists of 72 companies, formed in 12 battalions of 6 companies each, which furnish 22 mountain batteries of 4 guns each.

It is believed that this artillery, furnishing 1,644 field guns and 88 mountain guns, has lately been reorganised, and that the 13 regiments now form 14 brigades, one of which is attached to each of the first 14 army corps. The 15th corps continues to have only mountain batteries.

Each of these 14 brigades is to be formed as under—

1st.—One regiment of corps artillery,	}	1 Division of 3 Heavy Batteries.
		1 Division of 2 Light Batteries.
		1 Ammunition Column Cadre.
		1 Depôt Cadre.
2nd.—Two divisions of divisional artillery, each	}	1 Division of 3 Heavy Batteries.
		1 Depôt and Ammunition Column Cadre.

In addition there are to be—

1st.—8 divisions of 2 horse artillery batteries, each intended for the cavalry divisions.

2nd.—9 divisions of 3 heavy batteries, 1 dépôt and ammunition column cadre, each intended for the Landwehr infantry divisions.

This total will give—

- 154 Field Batteries.
- 29 Field Batteries for Landwehr.
- 16 Horse Artillery Batteries.
- 51 Dépôt Cadres.

Technical Troops.

Railway and telegraphs, engineers, pioneers.

The railway and telegraph regiment is intended to secure the railway and telegraph services in the field.

In peace time the regiment consists of a staff, 2 battalions of four companies each and a dépôt cadre.

In time of war these units are expanded to form—

- 8 Railway Companies.
- 3 Field Telegraph Staff (Direction) of 1st line.
- 3 Field Telegraph Staff (Direction) of 2nd line.
- 43 Field Telegraph Sections and 3 Mountain Telegraph Sections.
- 1 Dépôt Battalion of 2 companies.

The total of these formations gives—

Officers	...	...	...	117
Men	...	...	...	4,652
Horses	...	...	...	347

The railway companies and telegraph sections are provided with a supply of tools, apparatus and diverse articles, which form their field equipment; the telegraph sections also have line material. All equipment is carried on special vehicles, and that of the mountain section is prepared for pack carriage at any moment.

The direction of the military railway service is given to a staff officer of superior rank, who communicates with the Commander-in-Chief of the army through the chief of the staff.

The telegraph service is placed under the direction of a Director of Telegraphs attached to the head-quarters of the army.

The men forming the combatant portion of these formations are armed with the Werndl rifle for special corps, the pattern of which is shorter and lighter than the ordinary rifle, with the short bayonet and pioneer's sword. All other men have only the pioneer sword. An under-officer carries 20 and men 30 cartridges.

The engineers mobilise 40 field companies, 4 reserve companies and 10 dépôt companies, giving a total of—

Officers	...	...	...	337
Men	...	...	...	13,800
Horses	...	...	...	1,814
Vehicles	...	...	...	480

Each infantry division mobilised receives an engineer company.

The pioneer corps should mobilise 20 field, 5 reserve and 2 companies,

5 reserves of *matériel* and 2 mobile dépôts of *matériel* and 5 dépôt companies, giving a strength of—

Officers	...	...	...	181
Men	...	...	...	7,092
Horses	...	...	...	607
Vehicles	...	...	...	140

A company is attached to each army corps mobilised, and carries bridging *matériel* with the advanced guard capable of throwing a bridge of about 15 yards for crossing moderate obstacles unexpectedly encountered.

The regular bridging *matériel* always remains with the army reserves, and admits of a stream 57 yards wide being bridged. With the two bridge trains and that with the pioneers each army corps has 180 yards of bridging.

The grand total of these troops, railway and telegraph, engineers and pioneers, gives a war strength of—

Officers	...	...	...	635
Men	...	...	...	25,544
Horses	...	...	...	2,837
Vehicles	...	...	...	620

without taking into account vehicles for railways, telegraphs and bridging *matériel*.

Train.

The train or transport in time of peace consists of in time of peace of three regiments, which are so organised that in time of war they are capable of expansion into the following :—

In First Line.

1st.—3 staffs of regiments intended to form the supervising staffs of the army.

2nd.—13 staffs of divisions.

3rd.—15 train squadrons attached to—

- 1 Squadron to head-quarters of army.
- 8 " " " of the 3 field armies.
- 18 " " " " 18 army corps.
- 42 " " " " 1 infantry division.
- 5 " " " " cavalry division.
- 11 " " allotted to the 44 bridging trains.

4th.—20 squadrons of mountain train.

In Second Line.

1st.—13 army corps parks.

2nd.—13 sections attached to supply dépôts.

3rd.—13 sick horse dépôts.

4th.—89 detachments attached to field hospitals.

5th.—3 army parks.

The three dépôts of the regiments remain in the interior of the country. The total strength is—

	Officers.	Men.	Horses.	Vehicles.
1st Regiment	... 259	10,609	14,089	2,557
2nd "	... 288	12,525	16,567	2,732
3rd "	... 253	9,996	12,697	2,342

The Cis-Lithuanian Landwehr.

This Landwehr is formed in three categories—

1st.—Service for two years for those who have finished their ten years' service in the active army and reserve.

2nd.—Service for 12 years for all men fit to serve who have not been included in the contingents for the active army.

3rd.—All men freed from all military obligation who engage to serve voluntarily.

The commandants of the 1st, 2nd, 3rd, 8th, 9th, 10th and 11th army corps and the military commandant of Zara are the territorial commanders of Landwehr in the limits of their commands. Under them is a general officer of the army or a colonel of the permanent Landwehr cadre, with the title of assistant commandant of Landwehr to direct their training and to ensure the establishments and corps being always ready for mobilisation.

In each army corps there is a special staff for Landwehr, together with the army corps staff.

On mobilisation or during manoeuvres the assistant commandant of Landwehr takes command of all the Landwehr troops mobilised in the army corps district.

On a peace footing each Landwehr battalion has a permanent cadre consisting of—

The Commandant.

Officer in charge of equipments.

Cadre of instruction.

There are 82 battalions. During peace time these battalions (except the 4 Dalmatian battalions) are grouped 3, 4 or 5 together, and form 22 regiments, which have a number and only bear the name of their recruiting province.

The 5 first regiments are Landwehr Rifles, the remaining 17 Landwehr infantry, but there is no difference in recruiting, or tactical use, only in clothing.

On mobilisation each Landwehr battalion furnishes—

1 Battalion Staff,

4 Service Companies,

1 Dépôt Company,

and in addition a variable number of reserve companies according to the number of men furnished by the battalion district.

The battalion has a strength of—

22 Officers.

960 Men.

On mobilisation the Landwehr regiments are formed into brigades and divisions.

The division comprises—

The Staff.

Two Brigades Staff.

14 to 15 battalions of Infantry.

3 to 4 squadrons of Army or Landwehr Cavalry.

1 Division of 2 Batteries of the Army Auxiliary Services.

The commanders of divisions are generals of the active army, those of brigades either generals of the army or colonels of the army or Landwehr.

The reserve companies are formed into reserve Landwehr battalions, chiefly attached to garrisons.

The totals furnished by the Landwehr come to—

82 battalions, about...	...	...	82,000
Special arms	...	...	15,000
Cavalry	...	...	6,000
82 Dépôt Companies	...	...	24,600
			<hr/>
			1,27,600
The total contingent is about	...	...	1,70,000
			<hr/>
			42,400

There consequently remain available 42,400 for the reserve battalions, forming 30 to 40 battalions for garrison service.

The Special Landwehr of the Tyrol and Vorarlber form 20 battalions of rifles (Landesschützen), of which 10 are for field service and 10 for reserve, giving a total of 19,800 men with 2 squadrons of 160 each and 400 gunners for mountain artillery.

The Landwehr cavalry consists of 6 regiments, 3 of Dragoons and 3 of Uhlans ; each regiment has for service one dépôt squadron.

Hungarian Landwehr.

This Landwehr also forms an integral part of the active army which it reinforces, and also guards the interior of the Empire. In time of war it cannot be employed outside Hungary without the authority of the Reichstag. In peace time it can be exceptionally employed in the maintenance or re-establishment of public order.

It is formed in three categories—

1st.—All young men who have not been required for the annual contingent for active army, reserve or navy. The period of service is 12½ years, or up to the age of 32.

2nd.—All men who have finished the 8½ years' army and 7 years' reserve service. They have to serve two years in Landwehr.

3rd.—Men who having fulfilled all the military obligations are still fit for service and engage for two years or during a war. Hungarian territory is divided into seven large Landwehr districts, at the head of each of which is placed a general officer of Landwehr, who is under the superior commander of Landwehr, with the Minister of National Defence.

Each of these districts on mobilisation forms an infantry division.

The districts are subdivided into brigades, demi-brigades, battalion cadres and company circles, and each furnishes also one or several cavalry regiments.

Each district has 2 infantry brigades of 6 or 7 battalions ; each

brigade, 2 demi-brigades* of 3 or 4. The total of this Landwehr is 92 battalions, which on a peace footing have a permanent cadre of 9 officers and 48 men.

Each battalion on mobilisation leaves a *depôt* company to fill up the waste in the service battalion.

Cavalry of Hungarian Landwehr.

A general officer is appointed permanent inspector-general of Hungarian cavalry. It is formed in 2 brigades of 5 regiments of Hussars each, the commanders of which, colonels or generals, are under the inspector.

Each regiment is divided into 2 divisions of 2 squadrons, giving a total of 40 squadrons.

In peace time each regiment has a permanent staff cadre of 8 officers and 11 men, and a squadron cadre of 2 officers and 35 men.

On a war strength the Hungarian Landwehr comprises—

92 Battalions in first line of 4 companies intended to be at once formed into division.

32 Battalions in second line of 4 companies.

94 *Depôt* Companies.

Each battalion has a strength of—

Officers	...	...	...	22
Men	...	...	...	954
Horses	...	...	...	28
Vehicles	...	...	...	8

A *depôt* company has—

Staff {	Officer	...	...	...	3
	Men	...	...	...	8
	Officers	...	...	...	3
	Men	...	...	...	223

If the strength becomes more than 300 a second company is formed.

The total of the infantry is—

124 Battalions	{	Officers	4,048	}	124,648
		Men	...	...	120,600
		Horses	...	...	8,082
		Vehicles	...	...	992
94 <i>Depôt</i> Companies	{	Officers	564	}	22,278
		Men	...	...	21,714

The battalions in first line are formed in 9 divisions of 3 brigades each, which have a place in the 42 divisions of infantry, which constitute the field army of Austro-Hungary and form the third division of army corps. The artillery engineers and auxiliary services are furnished by the active army.

The cavalry 4 squadrons, either by the Landwehr or active army.

The battalions in second line or either to form reserve brigades and divisions, or to garrison large towns or fortresses.

* Now believed to be replaced by "regiment."

The cavalry consists of 10 regiments of Hussars, of 4 field and 1 dépôt squadron, giving a strength of—

Officers ...	...	...	300
Men ...	...	...	7,070
Horses ...	...	...	6,480
Vehicles ...	...	...	19

The 4th section of the 4th squadron in each regiment is a pioneer section provided with the tools necessary for forming communications and telegraphs. In the first 3 squadrons 5 men in each have entrenching tools.

The general strength of the Austro-Hungarian army is as follows :—

The general strength of the Austro-Hungarian Army					
Active Army	Staff ...	Officers	...	2,760	6,154
		Men	...	3,394	
		Horses	...	5,666	
	Infantry	Officers	...	12,020	562,817
		Men	...	550,797	
		Horses	...	15,630	
	Cavalry	Officers	...	2,337	63,919
		Men	...	61,582	
		Horses	...	61,295	
	Artillery	Officers	...	1,991	78,896
		Men	...	76,905	
		Horses	...	49,216	
	Engineers & Technical Troops	Guns	...	1,540	26,180
		Officers	...	636	
		Men	...	25,544	
	Train ...	Horses	...	2,837	38,900
		Officers	...	800	
		Men	...	38,100	
	Auxiliary Services	Horses	...	43,353	34,800
		Officers	..	6,193	
		Men	...	28,607	
	Cis-Leithan	Horses	...	1,075	147,754
		Officers	...	2,350	
		Men	...	145,404	
	Landwehr Hungarian	Horses	...	6,070	155,056
		Officers	...	4,982	
Men		..	150,074		
Landwehr Tyrol and Vorarlberg	Horses	...	16,742	20,970	
	Officers	...	450		
	Men	...	20,520		
Gendarmerie	Horses	...	320	6,338	
	Officers	...	174		
	Men	..	6,164		
TOTAL ...				1,141,782	

men with 202,204 horses and 1,540 guns.

This is the field army which Austro-Hungary can place in the field when its formation has been fully developed, without counting the reserve and garrison troops.

THE ANNAMESE ARMY IN 1885.

By MAJOR D. VON STRAUTZ.

Abridged from the German by Sergeant J. J. Königs, B.U.L., and Librarian of the I.B. of the Quarter-Master-General's Department.

The Indo-Chinese peninsula has, during the past few years, been the scene of important political events, which have caused many changes in the Government, and have to some extent thrown open the country to European communication.

Annam itself has by the recent treaties become almost a French feudatory state.

It consists of a comparatively narrow strip of coast land stretching nearly due north and south between the China Sea and the coast range skirting the left bank of the Mekhong.

The inhabitants of Annam, although mainly of Mongolian stock, present great differences both physically and mentally. The inhabitants of the hills are, as a rule, of taller stature, fairer complexion and ruder habits than those living in the plains, and many of these hill tribes still lead a nomad life. The civilised Annamese, although they are more advanced socially and are more industrious, are at the same time less truthful and honest than the *Moi*, as the hill tribes are collectively called.

The Annamese are idle, luxurious, and incapable of deep emotion; but they are deeply attached to their native country and homes, and cannot remain away from home for any length of time. On the whole they are of a mild disposition, not to say apathetic.

The Government is an absolute monarchy, as is generally the case in Asia. The reigning king, whose power is despotic, bears the surname of "*The son of heaven*;" and is never called by his proper name, as this would be considered profane.

The army is under the command of the king.

The whole Annamese army consists of 40 regiments, which are divided into 5 divisions of 8 regiments each; the divisions are commanded by Grand Mandarins, who bear the title of Marshal, and are, at the same time, military governors of certain districts.

The most powerful of these Grand Mandarins is the Marshal-General, who commands the Royal Guard. The other Grand Mandarins command the troops stationed at Hué, and those in Northern, Southern and Eastern Provinces. The Brigadiers, Regimental Commanders, Captains, &c., are under the command of the Marshals. The Royal Guard is in reality meant for show and to provide appointments for favorites.

The Royal Guard is composed of life guards, lance bearers, color bearers, keepers of the insignia, and other officials, such as are only to be found in the train of an Asiatic despot. Besides these, there are whole parties of huntsmen for large and small game, armour bearers, umbrella bearers, sedan carriers, fishermen, gardeners, tea-makers, "swallow-nest" cooks, musicians, actors, dancers and watchmen for the temples, &c.

The strength of the Royal Guard is 7,450 men, who are only maintained for the above purposes.

Besides these, there is a garrison of about 43,000 men in the capital, which is mainly composed of followers and attendants of the princes and nobility.

When the citadel at Hué was attacked, these troops offered a very creditable resistance, and fought well while under cover.

There are about 54,000 more troops in the Northern and 18,000 in the Southern Provinces.

The total strength of the Annamese army is over 130,000 men, but in time of peace the greater part is on leave, the remainder being employed at the Harbours, Custom Houses and Post Offices.

The artillery consists of bronze and iron guns, which are 80 cm. and 3 wm. in length respectively, with a calibre varying from 4 to 43 cm.

The troops are armed with rifles and guns of the latest as well as of the oldest pattern.

Annam possesses a fleet of seven sailing corvettes, with crews of from 120 to 200 men, each carrying 28 guns; 300 junks, small and large, with an armament of two to six guns, and a crew of 40 men each; also two steamers, which were purchased in Hong-Kong, and five vessels ceded by France in 1876. These vessels are said to be in a most dilapidated condition, and the sailors are reported to be indifferently trained. The fleet is laid up along the banks of the Hué River in the winter season from September to March; the total strength of the navy is said to be 16,000 men.

The Annamese soldiers are perhaps neither better nor worse than other soldiers. It is true that they are wanting in energy and pluck, but they have shown, when properly lead and disciplined, they can behave better than most Asiatics, as they do not fear death.

Besides the regular army there is also a militia for service in each Province, the strength of which varies according to the size of the Province. This organisation is a great burden on the population. The pay of the militia is quite insufficient, and the consequence is that the people of the place where the militia is garrisoned are compelled to maintain them.

Elephants are employed for military purposes in the Annamese army. Formerly the Annamese army had 800 elephants; of these 120 were placed at the disposal of the king, under the orders of a Grand Mandarin.

There are four men to one elephant ; these men have to gather in the hills the necessary food for the elephants. The king alone is entitled to keep an unlimited number of elephants, and is the only person who is allowed to wear orange-colored clothes. Princes are allowed to keep only one or two elephants ; private individuals are not allowed to keep any.

Occasionally manœuvres (called minor wars) with elephants are carried out on the drill ground between the river and *enciente*. To a foreigner these manœuvres appear a farce, but they are only intended to accustom the elephants to artillery fire. Dummies made of straw represent the enemy. Soldiers armed with muskets and lances are placed in the intervals between the elephants for the purpose of driving them forward. They advance with their battle cry "hé-gia-ha." Some of the elephants charge the enemy, while others turn about and run away.

A MEMORIAL TO THE LATE SIR CHARLES MACGREGOR.

A MEETING was held at the rooms of the United Service Institution of India on Friday, 20th May, at which His Excellency Sir Frederick Roberts presided, to discuss arrangements for raising a memorial to the late Sir Charles Macgregor. Among those present were His Honor the Lieutenant-Governor of the Punjab, the Hon'ble General Chesney, Major-General Elles, General Chapman, Mr. H. M. Durand, Major-General T. P. Smith, Brigadier-General Nairne, Colonel Ben Williams, Colonel Collien, Colonel Higginson, Colonel Bushman, Colonel F. Lance, and more than thirty others.

His Excellency the Commander-in-Chief opened the proceedings by saying :—

I think this is a very representative meeting, and any conclusion we arrive at will be generally accepted by the majority of the subscribers to the Sir Charles Macgregor Memorial. We have met here to commemorate the memory of a man for whom we have all the very greatest respect and admiration, and I am quite sure that, when the object of this meeting is known throughout India, a very large number of subscribers will be found to join with us in commemorating the memory of so distinguished a soldier. I should like to know what you think would be the best mode for us to proceed. There have been four proposals made, and I dare say we might now appoint a Committee of gentlemen whose time is not so occupied perhaps as that of the rest of us, and they would consult with people at different stations and let you know what their views were. Four proposals have now been made, and I do not know whether we are in a position to say which of these four is the most suitable, or whether you think it would be better to wait till the matter is thoroughly ventilated and the Committee have had an opportunity of ascertaining the wishes of other people. The following proposals have already been made :—

- 1.—The establishment of a scholarship either at the Royal Military College, Sandhurst, or at the Staff College, for excellence in military reconnaissance.
- 2.—The striking of a gold medal, to be offered yearly for competition in India under conditions that will be decided by the Council of the United Service Institution of India, coupled by a money grant, accompanied by a certificate, to the native soldier who, during the year, has rendered the most efficient service in exploration and reconnaissance.

His Excellency also read a telegram from Colonel Eardley Wilmot approving of the above proposals and suggesting that a statue should be erected in Westminster Abbey or St. Paul's; and also a letter from Captain C. V. Hume proposing a memorial in connection with

Marlborough College, such as a scholarship to be competed for annually by boys electing a military career, the examination to be carried out in the same manner and in the same subjects as at Woolwich and Sandhurst. If this was agreed to the Head Master to be communicated with to ascertain what was most needed in the school.

These are the four proposals. I have got another one suggesting that we should have a picture. It is rather a difficult matter to decide what would be best.

Mr. H. M. Durand : I think it would be better to get as many opinions as possible beforehand. So much would depend on the amount of money collected.

General Elles : I think there is a great deal to be said in favor of associating the memorial with reconnaissance, because if there was any matter in which Sir C. Macgregor was a leader it was in that particular line. You may remember that, during the campaign in Bhutan, during a time when there was little doing, he and a brother officer were absent, reconnoitring for some weeks, and at one time nearly lost their lives. They only escaped by capturing the sentry who challenged them. He was not a man who talked much of what he did, and the story is not perhaps generally known. I think considering that he was above all things a reconnoitrer it would be a pity not to have an expression of opinion at the present meeting as to whether the memorial ought to be associated with that subject.

His Excellency the Commander-in-Chief : I always thought myself that poor Sir Charles Macgregor's life was really lost through his last reconnaissance in Beluchistan, shortly after, and from the effect of which, his companion Major Lockwood died. There can be no doubt that he was *facile princeps* of all our reconnoitrers.

The Hon'ble General Chesney : I think, Your Excellency, that whatever may be the practical form which the memorial takes, there is a great deal to be said in favor of having a memorial in the shape of a picture or statue. I myself think it would be best to have a picture kept at Simla, which is the head-quarters of the Army and of Indian society, where any one coming to Simla would have a recollection brought to mind of the man himself. Sir Charles Macgregor was a man whose name was very well known, and if there is any old Marlburian who would take up the matter there might be a very large number of subscribers, and we might have both the picture and some other memorial in the form of a prize to the Army. I am very strongly in favor of having in any case a portrait.

The question being asked where the portrait should be put General Chesney said that if their institute had an appropriate location that would be the most suitable place, but without that perhaps the Simla Town Hall was the best place where every one would see it. The picture could easily be taken from a photograph, of which there were several.

Mr. Durand thought that Sir Charles Macgregor's own wish would have been that the larger portion of any money obtained for a memorial should be spent on something that would be of practical use to the

Army, and therefore it was important not to swamp that object by spending too much on a picture or statue, otherwise he had no objection to the latter.

General Chesney said that, if they consulted the individual wishes of distinguished men, they would probably have no pictures or statues at all. The Gordon Memorial was a case in point.

Mr. Durand : You cannot expect to get nearly so much money in this case as for the Gordon Memorial, and, if you have to decide between two objects, I think you should take the one that is of use to the Army rather than the picture. If you can have both I agree that it would be very desirable.

General Chapman : I do not think many soldiers would have an opportunity of seeing the picture of Sir Charles Macgregor at the Town Hall, and the Army would know very little about it.

His Excellency the Commander-in-Chief said that, as far as he could ascertain, the general idea was in favor of some commemoration memorial in India, and that it should be associated with reconnaissance in some shape or other—a gold medal for officers and a silver medal for natives, or something like that, which could be decided afterwards. If the meeting decided whether that was acceptable or not then the Committee could lay it before the public. Of one thing he was very sure, and that was that it was the general wish to have it in India where Sir Charles Macgregor's name was better known than elsewhere. It was not perhaps generally known how much the United Service Institute owed to Sir Charles Macgregor. His whole heart was in it, and he never ceased to labor for it.

If it was agreeable to every one then he thought the proposal circulated might be made in connection with this Institute. He would like those who were in favor of going on this line and of having something in the shape of reconnaissance to hold up their hands.

The proposal was carried almost unanimously.

His Excellency the Commander-in-Chief : If we get enough money then I agree with General Chesney that something in the shape of a portrait would be very good. The next step will be to circulate subscription papers, and in another month or six weeks we can hold another meeting to decide farther.

General Chesney : I think we should have a large and representative Committee with working Sub-Committees.

At the suggestion of General Elles His Excellency the Commander-in-Chief consented to be President of the Committee. The Hon'ble Mr. J. B. Lyall and the Hon'ble General Chesney consented to be Members of the Committee.

It was then agreed that Colonel F. Lance should ascertain the names of gentlemen willing to serve on the Committee.

A subscription list being opened a sum of nearly Rs. 1,800 was promptly subscribed, after which the meeting separated.

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JAPAN.

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These articles are an amplification of the lecture delivered before the United Service Institution at Simla on the 5th August, 1887.

Major-General W. K. ELLES, C.B., A.-D.-C., Adjutant-General, in the Chair.

The following outline was placed in the hands of members at the lecture :—

Reasons for lecture.—The Japanese Officers. Jinrikisha. Position of Simla in regard to Japan and England. Decorative arts. Increasing allusions to Japan. New route to India by Canada and Japan.

Geography.—Size. Number of islands. Cities and towns. Seas. Climate. Scenery. Volcanoes. Fujisan. Circuits, Provinces, Fu and Ken.

History.—Division into five periods from 660 B. C. to 1854. Marco Polo A. D. 1295, Pinto A. D. 1542, Xavier A. D. 1549. Portuguese and Dutch settlements. Celebrated names. 1st Mikado Jimmu Tenno B. C. 660. Kmpress Jingu-Kogo conquers Corea A. D. 202. Successive supremacy of the clans Fujiwara, Minamoto, Hojo, Ashikaga, Taira, and Tokugawa. The Shoguns Yoritomo, Nobunaga, Hideyoshi or Taikosama, Iyeyasu, Hidetada. The Mongol Armada A. D. 1281. Battle of Sekigahara 1600. Massacre of Shimabara 1677. Legacy of Iyeyasu. The ancient classes Kuge, Doimicos, Samurai and Heimin.

History subsequent to 1854.—Perry expedition. Treaties of Commerce, Treaty Ports, Agitation, Assaults, Bombardments. Bakufu and Chuishin. Lord Elgin, Abolition of the Shogunate and great Revolution of 1868.

Present form of Government.—Mikado Dynasty. Privy Council Cabinet. New classes. Satsuma Rebellion of 1877. The brothers Saigo. Its Corean origin, progress and conclusion. Formosa expedition. Corean expedition.

Forces.—*Military and Naval.*—Modern Army and Training Schools. French Military system. Quantity and quality of Troops. Conscription. Recruits. Factorics. Uniform, horses, Murata Ride. Naval Armament.

Commercial prosperity, progress, and enterprise.—The results of 19 years. Revenue and expenditure. Exports and imports. Financial difficulties. Paper Currency. Want of internal development.

Language, Literature, and National System of Education.

Religion.—Buddhism and Shintoism. Early Christianity. Temples and symbols.

Art.—Its first fosterings under the Feudal system. The effect of Japanese religion on its art. Ten branches of art. Imitative faculty. Professor Anderson's criticisms.

Character and disposition.—Habits, bathing, cosmetics, tattooing, dress, dwellings, food, picnics, verse-making. Tea-houses. Sense of humour. Preternatural coolness. Harakiri. Sense of chivalry.

Present state of Japanese civilisation and the Christian movement.

Reasons for lecture.—There are several reasons why Simla seems a suitable place and this a suitable time for a lecture on Japan. It is the first place in India which official representatives of the Japanese Government have made their residence for any length of time. I refer to the three staff officers,—Captain Fukushima, Lieut. Tanaouchi, and Surgeon Sugeno, who were among us last year for six weeks, making themselves acquainted with the details of our military system, before touring through India. Their letters always recall gratefully the continuous courtesy and kindness they received in this country from the Viceroy at Government House to the youngest subaltern who had the opportunity of entertaining them in his mess. Captain Fukushima writes that he has been "speeching" before various societies in Japan on his Indian tour, and always mentioning the kindness he received from "civil and military gentlemen." He is now military *Attaché* with the Japanese Embassy at the Court of Berlin.

Secondly, that humble but useful vehicle, the Jinrickshaw, of which so many are at the present moment standing outside the doors of this hall, and of which some 600 are in use by the residents of Simla, reminds us of the debt Simla owes to Japan. Starting in 1870 from the original idea of a straight-backed, cane-bottomed chair with the fore-legs cut off, a pair of shafts stuck on in front, and the whole on two flimsy wheels, without the vestige of a spring, improvements have been gradually effected until what may now be considered an extremely neat, comfortable, and commodious vehicle is to be found nearly everywhere throughout Japan.

The number plying in Tokio is upwards of 30,000, and in all Japan it amounts to over 180,000. No less than 2,245 were exported from Yokohama alone in 1885, chiefly to Shanghai, Hong-Kong, and the Straits Settlements, but many also to India.

Their cost for export is nearly £3, while in Simla they cost about Rs. 90. They are usually pulled by one man at a rate of 2d. a mile; while for rapid journeys two men are employed, running tandem. Jin-riki-sha is derived from three words, signifying respectively *man, power, carriage*.

Thirdly, it is difficult for any one, with the most superficial acquaintance of Simla drawing-rooms, to avoid coming to the conclusion that Japan shares with England the honor of decorating our show-rooms to the exclusion of almost every other country in the world. One is met at every turn with specimens of Japanese works of art, thus once more

emphasising what may be characterised as her second domestic claim upon us.

Fourthly, it has been usual to think of Japan as a country very far distant and at the other end of the world ; whereas we find on consulting a map that it is only 50 degrees distant from India against the 80 degrees of England. So far, therefore, from occupying a central position between the two sets of islands, which are as harbour lights on either side of the Eastern Hemisphere, Simla is actually 2,000 miles nearer to Nagasaki than to Greenwich as the crow flies.

Again, it is almost impossible to take up a newspaper in the present day without finding a paragraph about Japan. Till recently mentions of Japan were few and of small importance ; but we now find our public men making constant allusions to the country, such as those by Canon Westcott in his recent C. M. S. speech in London, and by Bishop French from a Simla pulpit.

Lastly.—We may say at once that the opening of the Canadian Pacific Railway has placed Japan in an absolutely different relation with India to that which she had previously occupied. The writer of the great Jubilee article in the *Times* of June 21st considers the opening of that railway and the establishment of a line of steamers connecting its western terminus with India and Japan “ by far the most important “ achievement of recent years. We thus gain not merely a shortened “ route to the East, but one which passes entirely over great ocean high- “ ways and British territory, instead of through a land-locked sea “ and narrow gut which accident or design may at any moment render “ impassable.” He adds that, in view of the expansion of commerce during the last half century, and the immense undeveloped resources of Canada, it would be rash to set any limits to the future possibilities of the great Imperial highway.

These accounts, together with a paragraph in an Indian newspaper, appeared on July 22nd, the very day in which the notes of this lecture were submitted to the Council of this Institution. The latter paragraph told us that the “ Abyssinia,” the first of the new line of steamers from Vancouver’s Island to Yokohama, had made the voyage in 13 days, and that the Captain believed it need not exceed 10 days. This means that it would be possible, with quick trains and careful arrangement, to send letters from England to Japan in twenty-four days *via* Canada, and troops within 30 days. The voyage from Calcutta to Hong-Kong occupies 14 days, and Yokohama is five days voyage beyond Hong-Kong. Consequently we may expect to see the voyage from Calcutta to Yokohama done in 19 days by such lines as the Pacific Occidental and Oriental S. S. Companies. This, with the 24 days beyond to England, places London within 45 days distance of Calcutta by the Canadian route.

A first-class passage from Calcutta to Yokohama cost Rs. 338-8. The passage from Yokohama to San Francisco is advertised at Rs. 563 and on to Liverpool at another Rs. 281, with a total reduction on the whole of Rs. 202 to officers of the United Services. The passage

from Bombay to Liverpool is advertised at Rs. 1,215-8, with a reduction to officers of Rs. 112-8, or by opium steamers of Rs. 957-4. The Canadian Pacific Railway say they can calculate on making the time between Japan and England less than 30 days for mails, passengers, and light freight. When there was cholera in Egypt last year troopships occupied about 62 days by the Cape of Good Hope, so that the new route would be at last 15 days quicker than that by the Cape. This very day a telegram has arrived telling us of cholera at Malta and another of the Parliamentary deputation which has waited on Lord Salisbury, requesting him to consider the new route for the Indian mails.

Over and above the reasons thus given for paying special attention to Japan at the present moment I may point out the many advantages which we in India possess for discussing the country and its people.

While in the matter of Geographical position, size, population, maritime habits, the defensive armament and policy of an island nation, we find an obvious comparison with our own islands, in respect to its Asiatic position, its religion, customs, agriculture and fiscal system, India has especial advantages for comparison not possessed by the British Isles.

Geography, Size, Population.—Japan, then, consists of four large islands—Hondu, Kiushiu, Sikoku and Yezo. Their area together is 148,456 miles with a population of nearly 38,000,000, while the area of our own islands is 120,000 square miles bearing a still denser population proportionately of nearly 35,250,000 souls.

Yezo—The island of Yezo is peopled by the aborigines of Japan, known as the Ainos.* It stands to Japan Proper much in the same relation that Iceland does to Denmark. It is governed as a colony, and its people differ entirely from those of the three chief islands of Japan, whose inhabitants profess a great contempt for the Ainos.

Islands.—Besides these four islands there are upwards of 3,000 small islands round the Japanese coasts, including the Riukiu (or Loochoo), the Kuriles (Ochijima) and Bonin groups.

It will be remembered that in 1875 Japan surrendered Saghalin to Russia, obtaining the eighteen uninhabited Kuriles in exchange, an arrangement much to the advantage of the greater power.

Towns.—The size of Japanese towns may be estimated from the fact that the thirty largest among them have a population of over 30,000 each. Tokio has a population of 902,837 and Osaka of 358,970. The thirty largest English towns after London bear a population of over 70,000 each.

Mountains.—A glance at a map will show us that the chief mountain ranges are, generally speaking, formed by the watershed between the Pacific and Japanese Seas, and stretch like a backbone through

* Miss Bird's well known book "Unbeaten Tracks" gives a good description of these tribes. For more detailed information the Japanese Asiatic Society's Journals may be consulted. A fresh work however on the Ainos has just appeared by Mr. Chamberlain.

the whole length of the islands. The whole empire may be called a mountain country, in which the level cultivated ground, including the artificial terraces, form not an eighth part of the whole land. In general the Japanese mountains follow the longer extension of the islands from N.-E. to S.-W. and combine tolerably lofty summits with low passes. Rounded mountain forms considerably predominate, and the mountain landscapes are not so much distinguished by magnificently wild shattered and disrupted masses of rock as by their charm and freshness. As in the case of its scenery so in that of its mountains Japan would seem to bear a closer resemblance to the Island of Sicily, in whose latitude it lies, than to that of any other country. Its volcanos are very numerous, and no less than eighteen are still active. Of these Asamayama in Kiushiu is the most imposing, and may be called the Etna of the land. In the number of its hot springs Japan is unrivalled. They may be counted by hundreds and are distributed over the empire. Sulphur springs predominate, but chalybeate and saline waters also exist, although few in number.

Climate.—Generally speaking Japan may be said to enjoy a long comparatively cold and clear winter and a moist hot summer; it necessarily varies greatly, being Arctic in intensity in the far North Kurile Islands, while the Riukiu and Bonin groups enjoy perpetual summer. All the mountain ranges are wrapped deep in snow during the winter months, but in the valleys, plains and towns the sun's heat almost always melts the snow and prevents its lying throughout the day.

Fujisan.—It is impossible to leave the physical features of Japan without mentioning the "peerless" Fujisan (commonly and erroneously called Fussyama), whose imposing figure amongst the holy mountains of Japan has been made familiar to us by its constant appearance on Japanese pictures and screens. Sixty miles from Tokio it rises majestically on a broad base to a height of 12,500 feet; an enormous number of pilgrims ascend it annually by four separate paths. No traveller approaches the Bay of Yeddo without warming into enthusiastic and romantic admiration as he catches sight for the first time of the snow-clad summit of the celebrated Fuji. Like a mighty sugarloaf struck by the first rays of the morning sun it is said to glow with a peach bloom red, or, as the day grows on, to stand out white and clear against the blue background of the Eastern sky. The last eruption of Fujisan took place in 1807, when the whole summit burst into flames. Rocks were shattered and split by the heat, and ashes fell in Yeddo, 60 miles distant, to a depth of several inches.

Scenery.—Of the Se Touchi or Inland sea of Japan the scenery is said to be unrivalled. Parts of the Mediterranean alone bear any comparison with it. Through this channel many of the steamers bound for Yokohama now pass. Of the land scenery, its lakes and its rivers, descriptions may be found at length in the current works of the day—a land of hills and valleys, of lakes and rushing streams. The lake scenery has been compared to that of Scotland, but the hills are neither so high nor so bleak as that of the heather country. Lake Biwa is 50 miles long by 20 broad.

It may further be mentioned that the Japanese have a troublesome and confusing practice of repeatedly changing the name of a river in its course and calling it after the various places it may happen to pass in its course ; on the other hand to their bays and straits they accord no names at all.

The hill scenery near Kioto, as well as throughout the province of Kiocho, is particularly fine ; a few of the provinces are flat. Shinamo, the tableland of Japan, rising 2,500 feet above the sea, forms the great watershed of Eastern Japan. The plain of Yeddo lies 1,800 feet below, from which the hills slope away northwards towards the province of Echigo.

Capes, Harbours.—Japan abounds in countless promontories and capes, besides being said to possess 56 large harbours. These are not accessible to vessels of large tonnage, but are admirably adapted to the accommodation of coasting junks and fishing craft.

The bay of Yeddo abounds with harbours. The inland sea is especially rich in this respect, Mitari and Takamoto being favourite places of resort for passing vessels.

The six treaty ports are : (1) Kanagawa (Yokohama) ; (2) Nagasaki ; (8) Niigata ; (4) Hiogo (Kobe) ; (5) Hakodate and (6) Osaka.

Minerals.—In its store of minerals, gold, silver, tin and lead, Japan is considerably supplied. In iron and coal the country is actually rich. Copper and antimony also are plentiful. It is computed that during the time of the Portuguese settlement, namely after A.D. 1600, £660,000 worth of bullion was exported yearly for 22 years. Gold is kept in the country as far as possible. The steel manufacture of Japan is celebrated in the Eastern seas, and the temper of the Japanese sword blades is as famous as those of Damascus and Toledo.

Under the tuition of the Portuguese, the Japanese also cast many bronze guns in the seventeenth century.

Fruits.—The fruits of Japan are the orange, apple, walnut, chestnut, plum, damson, peach and grape. Of these the plums are the best, and oranges rank next ; but none are equal in quality to the same fruits in Europe.

Tea.—The tea plant is extensively grown. As an export it ranks in value only next to silk. In 1885, 40 million pounds of tea were exported valued at over a million sterling. As a beverage it is drunk by the Japanese without milk and sugar, and the prevailing use of this stimulant throughout Japan is well known. It is offered to a new comer, whether he pays a visit, enters a shop or takes his seat in the verandah of a Japanese tea-house.

Cotton.—Cotton was introduced from India in 799 A.D. and thrives, but of this more must be said under the head of commerce. It may be mentioned that 7,000lbs. of cotton seed were imported from China in a recent year.

Agriculture.—Japan up to the present time has not been regarded as a good pasture country. The reason assigned has been the deleterious character of the bamboo grass which covers the country.

Cattle.—Cattle-breeding lingers far behind agriculture as in most Buddhist countries. Live stock is the great need of Japanese farming ;

but the people are gradually changing their diet of fish and vegetables, and becoming meat-eaters, this being a return to their pre-Buddhistic habits. The consumption of beef especially is increasing yearly, while it is computed that the pastures of Japan are capable of keeping 28,000,000 sheep: she is obliged at present to import 55,000,000 lbs. of woollen and mixed goods. The true wealth of Japan, however, lies in her agricultural, and not in her mineral or manufacturing resources. The Government have appreciated this fact, and several model and experimental farms have accordingly been established. Two thousand cattle and ten thousand sheep have at the same time been introduced from abroad.

Animals.—The oxen are small and sturdy. They are kept principally as beasts of draught and burden. The cow is not kept for its milk, and but little for the sake of its flesh; milk, butter and cheese are consequently wanting. Eggs, however, enter into the diet of the upper classes though not into that of the common people. I observe that in the year 1885 condensed milk to the value of 11,000 dollars was imported to the port of Hiogo. Ducks and game are commonly eaten, as also are monkeys, badgers and bears. A large number of monkeys especially are sold for food in the Tokio market. Their flesh is white, and said to be very palatable.

The other Japanese domestic animals are horses, dogs and cats. The horses, or rather ponies, are not powerful animals. They stand from 14-1 to 14-2 hands only. The dogs are much like Eskimo dogs, being usually white, grey or black in colour. Sheep and goats, donkeys, mules and tame geese are unknown. But the Japanese officers after seeing our mountain batteries reported on the advantage of introducing mule-breeding into Japan.

Birds.—Amongst the birds of Japan we may call attention to the well-known crane which is found on so many of our Japanese screens; the Tansho (*Grus leucauchen*) is the national bird of the country. It is held sacred and regarded as a symbol of longevity; white in body with a red crown, black tail feathers and black upper neck, it forms the slender picturesque figure so favoured by Japanese artists.

Besides pheasants of two kinds eight specimens of wild geese, swans, mallard, widgeon, teal, woodcock, woodpigeon, plover, snipe, bittern, herons and white waders comprise their birds. The waders, herons (Sagi) and cranes (Tsuru) enjoy popular favour most, the silver herons accompanying the labours of the peasant through the rice fields as in India and Egypt. No other creatures, excepting perhaps the tortoise, are so frequently found represented in picture books and on the most varied products of their art industries; and no illustration give a better insight into the deep observation of nature and great talent possessed by the Japanese for representing vividly and truthfully what they have seen. The tortoise, bearing the name of Kame, is a symbol of long life and happiness, and is very often pictured with young ones upon its back. In many sacred temple tanks it leads, under the protection of priests and pious pilgrims, a happy existence and attains a great age.

One specimen of bittern, it may be here remarked, was deemed worthy of a special rank of nobility and is known as the Co-i-saga or bittern of the fifth grade, like our own Sir-Loin of beef, so knighted by Henry VIII.

Fish.—The old authors of Japan, as well as those of more recent times, have referred to the great importance of fish as the principal daily food of the Japanese people, and also to the remarkable variety which are brought into the markets of Japan.

In the multitude and variety of the choicest species of edible fish the Japanese and Chinese seas appear to be unexcelled in the world and inexhaustible. Notwithstanding the hundreds and thousands of persons employed in fishery no appreciable decrease has taken place after thousands of years.

The rivers are well stocked with trout, carp, shad, eels, &c., and those of Yezo with salmon. But these take a very subordinate position as compared with the wealth of the sea, which constitutes the principal daily food of the Japanese people. So far no less than six hundred species have been collected and described; of these a large number are brought into the markets of the country.

Bream, perch, mackerel, mullet, haddock and shad are among the chief species. The Japanese consider their Tai or golden bream (*Chrysophris cardinalis*) one of their best fish. Its padded representative, which we give as toys to children or hang on our walls, will recall it to English observers. The mackerel family are to be found in the markets of Japan nearly throughout the year, represented in about forty different species. So abundant is fish that fish manure is an article of standard manufacture, sale and use. The variety and luxuriance of edible sea weed also form a curious feature of Japanese life.

Flora.—For the flora of Japan I can only refer the reader to Rein's excellent chapters on the vegetation and the underwood, marsh and water plants, the Hara, the forests and plant life. He says that even more than by its wealth of species does the flora of Japan surprise and interest us by the great number and difference of its genera, and thus reminds us of the tropics rather than of any country of the temperate zone. In many respects Japan stands alone among extra-tropical countries,

The plum blossoms of February, the cherry of April, the lotus of July, the summer azalias, October chrysanthemums, December azalias and constant evergreens are familiar to us from the descriptions of every successive traveller.

Unlike India, Arabia, and Ceylon, Japan has few aromatic plants.

Her conifers are numerous, and the most frequent pines—Akamatsu (red) and Kuromatsu (black)—have been brought home to us by many a Japanese drawing. The pine tree and crane being symbols of longevity are embroidered on robes presented to young infants.

The willow tree and swallow, bamboo and sparrow, indicative of gentleness, are oftenest represented on screens, fans and other upright objects of household adornment.

The chrysanthemum is the national flower of Japan, as is the rose of England. It forms the Great Seal of the Imperial Government; it is embroidered on flags and banners and printed on official documents. The army now wear it in the front of their caps. When in A. D. 1331 the succession to the Crown was disputed, and there were two Courts, the northern and the southern, each side claimed the Imperial chrysanthemum.

Kuro-shiwo or Gulf-stream.—The Pacific, like the Atlantic, has its gulf stream; and the Kuro-shiwo, or Black-stream of Japan, has an interest beyond that of its importance for navigators.

Like that of the Atlantic, so the Kuro-shiwo owes its existence to the equatorial current, and the peculiar coast formation of the contiguous continent. Its course too is diverted by the axial rotation of the earth, and the influence of the monsoons.

It flows up past Formosa, Japan and the Kurile Islands, round by Alaska, Oregon, and California, and thence flows westward to the Sandwich Islands. So that a junk or tree left in the Kuro-shiwo off Kiushui would, if not stopped, drift round the river at from Japan to Hawaie.

In this manner for the past twenty centuries Japanese fishery boats and junks caught in the easterly gales and typhoons have been swept into the Kuro-shiwo and carried to America. A large number of junks have been known to have been wrecked on the American shores. And writers go so far as to say that all probabilities tend to demonstrate the Japanese origin of a large portion of the American native races. Arguments from language are also forthcoming, unaltered Japanese words and shortened forms being found in the vocabularies of Indian languages. Peculiar Japanese idioms, constructions and particles are found nearly identical in the Indian languages. The superstition, custom and religion of Japan bear an extraordinary resemblance.

Arguments from physiognomy are almost patent. Photographs of Colorado and Nebraska Indians when shown to Japanese are taken for their own countrymen. The work done by Kuro-shiwo in transporting the seeds and animals and men of the Asiatic to the American continent may be proved by the great similarity between the fauna and flora of the Pacific coast to that of Japan.

Divisions.—In the year 1872 Japan was divided into Fu and Ken, i.e. into three Imperial cities and seventy-two administrative districts. The latter were in 1876 reduced to 35 in number, answering to French prefectures or Indian districts. However the old division into nine circuits and eighty-four provinces by the celebrated Empress Jingu Tenno, and introduced by her after the conquest of Corea in A. D. 202, held sway for so many centuries that for the better understanding of the history and civilisation of Japan it is as well to record them.

The first circuit or *Gokinai* comprised the five home provinces in the neighbourhood of Kioto and Osaka.

The remaining eight circuits comprised the remaining seventy-nine provinces. Their names mark their positions in the country.

2. Tokaido	...	Eastern Sea Road	...	(15 provinces.)
3. Tosando	...	" Mountain Road	...	(13 ")
4. Hokurokudo	...	Northland Road	...	(7 ")
5. Sanindo	...	Mountain Shade Road	...	(8 ")
6. Sanyodo	...	" Sunside Road	...	(8 ")
7. Nankaido	...	South Sea Road	...	(6 ")
8. Saikaido	...	West Sea Road	...	(9 ")
to which was added later Yezo Island; or				
9. Hokkaido	...	North Sea Road	...	(11 ")

These names recall in a measure the Afridi custom of calling their valleys and hills "by sunny side or shady side"—*pitau* and *geru*.

These ancient "circuits" still retain their names, although no longer administrative divisions, while the "provinces" have merely become geographical divisions of little importance.

On the other hand the recent arbitrary divisions of the country into Fu and Ken, subject as they are to change or modification, are of very subordinate value to the geographer.

History.—Just as it would be difficult, nay impossible, to give the slightest sketch of English history for a thousand years, say from King Alfred's reign to that of Queen Victoria in a few pages, and without the introduction of a certain number of names, so obviously would it be even more impossible to give the most elementary sketch of Japanese history for the greater period of two thousand five hundred years in the same space and without the introduction of a still larger number of names, which it would be difficult and probably uninteresting to make any attempt to remember.

I have, therefore, selected only a few names, namely those which have been connected with some of the most salient points of Japanese history, and can only endeavour, by dwelling on the events connected with those, to glide swiftly down the stream of Japanese history, and endeavour to give some idea of the sort of events which have composed its general character, and the condition of things in the past which has led up to that of Japan in the present, with which we are more immediately concerned.

FIRST PERIOD B.C. 660—A.D. 794.

From Jimmu Tenno and the founding of the kingdom of Yamato to the removal of the capital to Kioto.

Just as Romulus is the first name we connect with Roman history and the building of Rome in B.C. 753, so is Jimmu Tenno, first Mikado of Japan, the first name ever connected with Japanese history, dating from B.C. 660.

The foundation of the Japanese empire, therefore, is laid with the group which comprised Assyria, Media, Persia, Greece and Rome in contradistinction to the late group of Western powers which now dominate Europe, *viz.* England, France, Germany, Austria and Russia.

Grote gives the earliest authentic date of Athenian chronology as 683 B.C. The earliest Chaldean astronomical observation known to Pto-

lemy was that of an eclipse in 721 B.C. Babylon was only in its full glory from B.C. 600 to 580, and Croesus did not found the Persian power till B.C. 594.

Among these the first date of Japanese chronology takes a central place, while those of the Western powers date respectively : Clovis, A.D. 594 ; Charlemagne 800 ; Egbert, 800 ; Ruric of Russia 862, or twelve centuries later.

Japan then is the most ancient empire on the earth, and had its foundation in the days when Isaiah and Habbakuk were uttering their celebrated prophecies concerning the nations of the earth (B.C. 698—626).

China has changed her reigning dynasty repeatedly during the last 2,500 years, but for twenty-five centuries the family of the present Mikado presents in authentic history an unbroken line. He not merely claims a pedigree stretching back to B.C. 660, but no one can call in question the unparalleled claim.

It dwarfs the antiquity of the oldest royal family in Europe. The Mikado himself is believed in Japan to be the lineal descendant of the last of four gods, who succeeded the Sun goddess Tensho-Daijin, believed to be the daughter of the god who created the world. Of this divine race of sovereigns Jimmu Tenno was the first, and the present Mutsuhito is the 123rd in lineal descent. The goddess Tensho-Daijin accordingly holds the highest place in the Shinto worship of ancestors.

In the Mikado's proclamation of 1872 occur these words : " My house, that from Jimmu Tenno on to the present day, has ruled over Dai-Nippon according to the will of the gods * * * " thereby assuming it to be the oldest dynasty on the face of the earth, and carrying it back ten thousand years to the time " when our divine ancestors laid the foundation of the earth."

Mikado.—The word "Mikado" is derived from "Mi"—exalted ; "kado"—door, as in the "Sublime Porte," or the "Janab-i-ali," nearer at hand. The idea conveyed by the term in each case is that the titled one is too lofty to be named directly or otherwise than figuratively.

The Japanese always call their country Nippon, or sun rising, from the words "Nitsu"—sun and "hon"—rising or origin.

Japan.—Marco Polo in 1385 introduced Japan to the notice of Europe. When visiting the court of Manchuria he met ambassadors from the island kingdom of Zi-pangu, the Chinese designation Zhi-pon-kue or Ji-pon-kwo, from either of which the transition to Japan is easy.

Jimmu Tenno.—Jimmu means "the war spirit"; Tenno, "king of heaven." By the latter title every Mikado is regularly called. Early history records how Jimmu Tenno, landing from Hinga in the Bay of Osaka, subdued the neighbouring district, and became a powerful as well as enlightened prince. He overcame his foes, assured peace to the country far and wide, and developed the peaceful industries of his kingdom.

His title, Jimmu Tenno, is the posthumous title under which he

has continued to live in history. It was given to him centuries afterwards, when the long Japanese names of the Kojiki or sacred book were abbreviated. His original name was Kan Yamato Iware Hiko No Mikoto.

The first period of Japanese history accordingly comprises that from the foundation of the Yamato kingdom (or Land of the Mountains) in Gokinai, together with Jimmu's capital at Kashiwara in the year B.C. 660, to the removal of the Royal residence to Kioto in 794 B.C. Here his successors dwelt till A.D. 1868.

Conquest of Corea.—Next to the foundation of the empire and dynasty the most noteworthy event in this first period of Japanese history is the partial conquest of Corea by the Empress Jingu Kogo in A.D. 202. She, fulfilling an old and favourite idea of hers, as soon as she became Empress, fitted out a fleet, and herself, clad in armour, took the chief command, and sailed away to Shiraki (Corea). The King of Shiraki in alarm begged for peace, sent gifts, promised tribute and gave hostages. The Empress returned with her fleet, her gifts and her hostages to Kiushiu. Amongst other reforms derived from her Corean conquest she divided Japan into the circuits and provinces, whose names have remained till the recent revolution of 1868.

The conquest of Corea has ever been regarded as an event of incalculable importance for the later development of Japan. Corea became the connecting bridge over which eventually the whole civilisation and culture of China made their way into the land of the Rising Sun, with Buddhism and the philosophy of Confucius as their vehicles; and with these the language and literature, the domesticated animals and cultivated plants of China, as well as its peculiar and extremely interesting industries.

Thus, although in the succeeding centuries numerous expeditions and many a conflict are associated with this transmarine possession down to the present era, and the dependency of the Corean rulers upon Japan has become more and more relaxed until it has been completely dissolved, yet their relations with the Asiatic mainland lasting for centuries were the means by which new life was inspired into the old barbaric condition of Japan.

SECOND PERIOD. A.D. 794—A. D. 1199.

Kioto the Capital.—*The Fujiwara, Taira, and Minamoto supremacies—Establishment of the Shogunate and dual government.*

Kioto.—The second period of Japanese history commences with the foundation of the Heianjo or "City of Peace," namely, Kioto on the right bank of the Kamogawa river in A.D. 794 by Kuwammo Tenno, 50th Mikado. Kioto signifies the "sovereign's residence." Here until A.D. 1868 his successors dwelt, and as the continued seat of spiritual sovereignty it may be called the Rome of Japan.

Fujiwara.—The family of Fujiwara (Wistaria field) is the oldest in Japan, next to that of the Mikado. It has always played a distinguished

part in Japanese annals, and down to the present day enjoys many privileges. It was founded by Nakatomi, who was allowed to adopt the title of Fujiwara in recognition of his services as Councillor to the 38th Mikado (A.D. 662—670.)

For many centuries the Fujiwara clan held possession of almost all the high and civil offices, and during the 9th, 10th and 11th centuries held the government in their hands. Although their star began slowly to pale from the time of the Chief Councillor Tokihira in the middle of the 10th century, their influence continued to that of the 74th Mikado in A.D. 1108. Their family is the first brought prominently to our notice as Mikado-makers, recalling the *role* played by our own Earl of Warwick three centuries later.

At the present time ninety-five out of the one hundred and fifty-five families of the Japanese aristocracy (Kuge) are Fujiwaras in name and descent.

Their power gave way to that of the Tairas and Minamotos owing to the fact that leaders from the latter clans were usually chosen as generals to direct the expeditions sent by Government, and thus becoming inured to war grew up a hardy set of warriors. The Fujiwaras, on the other hand, grew wedded to Palace life at the seat of Government, and preferred the luxury of court to the discomforts of the camp and the dangers of the battle-field.

In the beginning of the twelfth century feudalism and military despotism came to the front; the influence of the Fujiwaras at court was reduced to a shadow, and the authority of the Mikado at this period was compared by an old Japanese historian to an empty cash-box, of which the Fujiwaras carried the key.*

Taira.—The Taira ("Peace") are first brought into prominence in the person of Kika Taka Mochi, great grandson of Kuwammu Tenno, in A.D. 889. They held the Government in the south-west of the empire, while the Minamotos in the north-east gained military glory as brave generals. Meanwhile these houses maintained a tolerable understanding, but gradually, as their leaders began to lust after the high offices and influence held by the Fujiwaras, violent rivalries and enmities broke out, which kept the country in agitation for centuries.

The conflict which broke out between the Taira and Minamoto clans, with their Hei and Gen, or red and white flags, for superior power, bears the name of Gen-Pei-Kassen, or "Source," "Peace," "Duel," from the words Minamoto=Source, Taira=Peace, Kassen=Conflict.

Our own Wars of the Roses and those of the Guelphs and the Ghibelines are short compared with this bitter feud of the Japanese Middle Ages, which may be said to have lasted under varying circumstances from the year A.D. 1156 for centuries.

The Taira Kiyomori had by his military prowess and energy crushed the power of Yoronaga, the Fujiwara Chief and the Minamotos acting

* Compare a description of the Indian Government given by a speaker at Simla in 1878, namely that of a gigantic office-box tempered by the occasional loss of the key.

with him. He had thereby raised himself to the office of Daijō-Daijin, or Chief Minister in A.D. 1167. By the battle which had been fought, the Taira party had obtained possession of the Imperial Palace, thus giving them the supreme advantage and prestige which always afterwards remained with the party in whose hands the Mikado was.

In A.D. 1159, Kiyomori succeeded in finally crushing the power of the Minamotos, and became the virtual ruler of Japan.

Not content with filling the offices at court with his own relatives, he determined to exterminate his rivals, the Minamotos, and accordingly caused to be murdered every one of the family that came into his hands. That he had not entirely succeeded in doing so was his dying regret in A.D. 1181. "Only strike off the head of Yoritomo, the Minamoto, and place it on my grave" were his last words.

Minamoto.—The early youth and romantic history of Yoshitsune are worthy of a more prolonged reference than any which can be here accorded. How his mother, Tokiwa, fleeing from Kiyomori with her two children and the babe Yoshitsune at her breast, hurried barefoot across the fields, while the snowflakes were deepening in the ground. How, wandering worn out with hunger and frozen with cold, she met with one of the soldiers of her foe, who, moved by her condition and that of her children, offered her food and shelter; how she then learnt Kiyomori's designs; how she hastened to Kioto and sacrificed her own liberty for that of her mother and children; how these were sent to various monasteries; how her son Yoshitsune escaped in course of time from the monastic life, which his spirit has found so irksome; how at the age of 21 he had won a reputation for peerless valour and consummate skill as a soldier, and was the exemplar of the loftiest code of Japanese chivalry, the perfection of a Samurai,—these things are all more fully recorded in Japanese histories.

A native audience in Tokio to-day will strain and reach forward to catch the first glimpse of a stage personation of this great character; and the name of Yoshitsune awakens in the breast of a Japanese youth emotions that kindle his enthusiasm to emulate a character which was the mirror of chivalry.

This prince it was who became to his elder brother Yoritomo, as the historian says, a Ney to his Napoleon.

After the death of the Taira, Kiyomori's disaffection against the dominant family became general, and Yoritomo—the greatest in some ways of Tokiwa's children—responded to the appeal made to him to attempt the reduction, or even the extermination, of the Tairas. Yoshitsune joined him, but they met with victory only to be succeeded by reverses.

In a second attempt and with a better military organization, Yoritomo was more successful. He advanced through the Kwantō or eastern provinces of Japan, won new troops to his standards, and fitted himself and his army for the task of acquiring the country.

Meanwhile his brother Yoshitsune was advancing from Mutsu with an army, and his cousin Yoshinaka with another along the

the Nakarendo towards Kioto. Thus there were three Minamoto armies with their allies advancing irresistibly towards the south. Yoshinaka approached the capital first, and completely defeating the troops which Menamori, the Taira general, had sent against him, established the power of the Minamotos by this the most decisive battle of the Gen-Pei-Kassen in the year A.D. 1182.

The Tairas entirely evacuated Kioto, taking the child Mikado with them. The ex-Mikado was delighted to see the last of the Tairas, and a provisional government was soon formed in their place.

Yoshinaka meanwhile, intoxicated by success and caring little for his superior Yoritomo, two hundred miles distant, caused himself to be entitled the Sei-i-tai Shogun or "Barbarian-subjugating great General." He was previously called the Asahi Shogun or "Morning Sun General," on account of the suddenness and brilliancy of his rising. His arrogance, however, knew no bounds. He even imprisoned the Mikado Go-Shirakawa, and severely oppressed the Buddhist monasteries.

Beyond this, he further showed himself to be jealous of his cousin Yoritomo, and took up a hostile attitude against him. To Yoritomo accordingly the Mikado Go-Shirakawa appealed for assistance.

Yoritomo therefore sent an army against his cousin, commanded by his brother Yoshitsune. Yoshinaka marched to meet his relatives, was completely defeated near Lake Biwa in A.D. 1184, and thereupon committed *harakiri*, i.e. suicide.

Yoshitsune now turned once more against the Taira Chief Munemori, whom his cousin had previously defeated in 1182, and burnt to the ground the Taira Castle of Fukuvara.

The last despairing struggle took place upon the sea at Dan-no-ura, near Shimonoseki, a place which again became celebrated in 1863, when the combined squadrons of England, France, the United States, and Holland bombarded the batteries of the Chosiu clansmen.

The adherents of the Taira had gathered here in order to cross with their leader, their wives, families and children, in upwards of five hundred ships to Kiushiu.

Yoshitsune came after them "like the wind." The Taira clans were at bay, driven and pursued to the sea shore. The Minamoto army was unencumbered. They had seven hundred junks. Griffis, the American historian, gives an exciting account of the naval battle which ensued. The white flag of Yoshitsune eventually triumphed, and the extermination which Kiyomori the Taira had destined for the Minamoto was turned against the Tairas. Neither age nor sex was spared, and those who could not die sword in hand were mostly doomed to perish by other means.

Kiyomori's widow, with her grandson the child-Emperor (81st Mikado), leaped into the sea and was drowned (A.D. 1185.)

Munemori, the Taira Chieftain, was made a prisoner, sent to Yoritomo at Kamakura, and later on beheaded. For centuries afterwards, and even to the present time, the ghosts of the slain Tairas are present to the imaginations of mariners and peasants on the Chosiu shore.

A few of the Tairas escaped and fled to Kiushiu, where a few hundred of their descendants still remain, secluded from their countrymen in their mountain fastnesses for seven hundred years, and living on in poverty and pride.

Meanwhile Yoritomo had been moved by his brother's fame and success into jealousy against Yoshitsune, whose personal bravery and military prowess had won to himself especially the enthusiasm of the Japanese for the house of Minamoto.

Yoritomo's breast was filled with envy and anxiety, lest, like that of Yoshinaka, the influential position of his younger brother also should be used against himself. He cast about therefore to get rid of him.

When Yoshitsune marched back in triumph to Kamakura to lay the trophies of his victory at Dan-no-ura before his brother, he was forbidden to enter the town, and obliged after long waiting and pathetic remonstrance to withdraw to his command at Kioto.

He was subsequently denounced as a traitor, obliged to seek an asylum with his old Fujiwara friend, the Governor of Matsu, by whose son—after the father's death—he was soon after ordered to be assassinated.

Another account says he committed *harakiri*; a third that he fled to Yezo, and lived among the Ainos for many years.

In any case the name of Yoshitsune has secured undying fame. Worshipped as a god by the Ainos, he is glorified in art, song and story. His features are pictured in boy's kites; his mien and form on household effigies displayed annually at the boys' great festival of flags. His name and deeds are held up as those of the "*Chevalier sans peur et sans reproche*."

In A. D. 1190 Yoritomo proceeded in great state from Kamakura to Kioto to present himself before the reigning and great Mikado. The magnificence of his procession, and the wealth he exhibited, astonished even the oldest courtiers. He was accorded a brilliant reception. Fresh festivities and entertainments followed one another for a month. Valuable presents were exchanged, many of which are shown in the temples of Kioto and Kamakura at the present day. Yoritomo returned to Kamakura laden with honors. Kamakura lies a few miles west of Yokohama in the bay of Sagami. It soon became the wealthiest, and next to Kioto the most important town of Japan.

In A.D. 1192 the Ex-Emperor Go-Shirakawa died, aged 67. Immediately upon his death the 82nd Mikado Yo-Soba-Tenno sent to invest Yoritomo with the chief military dignity, *viz.*, that of Sei-tai Shogun, or Chief Chastiser of Barbarians. From this time the title of Shogun received a higher significance. Hitherto all generals had been called Shoguns, but from this time the dignity was changed, and becoming hereditary, the dualism in the State assumed a fixed and permanent form. In point of form the Shogun remained the first vassal of the Mikado; in point of fact he became the real ruler of the country, till foreigners supposed him to be a sovereign.

Yoritomo had acquired not only all the civil functions once held by

the rival Fujiwara, but more military power with them than even a Taira had ever wielded.

The Feudal system which had been developing itself for centuries now received systematic shape, and Yoritomo by appointing a military with a civil Governor over each province in the interest of good order gave it national proportions, so that in course of time it came to be regarded as the national constitution. These governors were chosen from among his own relations.

During the last ten years of his power he gave special attention to the internal administrations of the country, enabling it by the enjoyment of peace and good laws to recover from the calamities of its wars and renew a condition of prosperity.

Yoritomo consequently is looked back upon as one of the greatest figures of Japanese history; one of its ablest rulers and a consummate general. He is described as brave, imperturbably calm, and of great energy, ready to reward merit as well as to punish wrong.

That he combined with these high qualities, selfishness, suspicion, and cruelty is a fact too amply borne out by the treatment of his brothers, cousin and near relatives. History can never forgive his treatment of Yoshitsune in particular.

The great consideration Yoritomo invariably showed to the Court at Kioto is important. He never omitted to obtain the sanction of the Mikado for all his reforms.

To this precedent and the deference ever paid by succeeding Shoguns to the spiritual authority of the Mikado must be attributed the extraordinary continuance of power for seven centuries in the hands of the Shoguns. Without it they must have been regarded as usurpers, and followed their lot. The power of Cromwell and the Napoleons was short lived. Had Napoleon III not upheld the Papal power, it seems unlikely that he would have ruled even for 19 years.

The loyalty and allegiance of the people to their Mikado has never swerved. Great soldiers have made the Mikados their tools, but have never once attempted to call themselves Mikados.

Yoritomo died at Kamakura in A.D. 1199 owing to a fall from his horse.

The great city of Kamakura is now covered by rice swamps and millet fields; a large temple alone remains.

The events which led to the establishment of the Shogunate and Fendal system of Japan have been traced at some length, partly on account of their own intrinsic interest, but chiefly on account of the importance of the epoch in Japanese history, when the dual power was established. From the year A.D. 1192 the ruling power flows in two lines—spiritual and temporal—for six hundred and seventy-six years, only to be united, on the abdication of the last Tokugawa Shogun, in the person of the 123rd Mikado, Mutsuhito, A. D. 1868.

(To be continued.)

NOTE.—I cannot let these pages go to the Press without expressing my obligations to Professor Rein of Marburg for the assistance I have derived from his valuable work on Japan.

MOUNTED INFANTRY.

By **LIEUTENANT A. C. YATE**, *29th Bombay Infantry.*

It is stated that, as the result of Major Hutton's lecture on mounted infantry at the Royal United Service Institution on 2nd June, 1886, a school for the training of officers and men in the duties of mounted infantry has been established at Aldershot. This being so we may assume that it is not improbable that a school for the same purpose will ere long be established at some station in India. In three campaigns in which Indian troops have taken part recently, *viz.*, the Egyptian, Soudan and Burmese campaigns, mounted infantry has been largely employed. The selection of a locality for a mounted infantry school in India would be based in the main on two considerations, *viz.*, the convenience of the place as a military centre and the fodder-supply thereat. These points, however, need not be discussed here.

Major Hutton in his lecture (R. U. S. I. Journal, No. CXXXV, pp. 695-701) states fully and tolerably completely the uses of mounted infantry both in operations against armies equal, or reputedly equal, to our own in drill, equipment and organisation, and against an enemy that is in each of those respects greatly inferior, or, in other words, against the troops of civilised and uncivilised nationalities. To these uses one addition may, I think, be made. In an action defeat may often be averted by the timely advent of reinforcements. Now-a-days, when armies are numbered by their hundreds of thousands and battle-fields extend over miles of country, to reinforce distant points with infantry is a matter of time, when time is most valuable. If, however, the commander of the army, or the commander of each army corps, had a sufficiently powerful force of mounted infantry at his disposal as a reserve, the reinforcement of a threatened point could be carried out with three-fold or four-fold rapidity. It is obvious that where large armies (say 200,000 strong) are engaged no small body of men would be of any decisive use for such a purpose. To be effective 15,000 or 20,000 men would be required, either to be retained under the orders of the Commander-in-Chief, or to be apportioned to the army corps commanders.

In a war with a European power the mounted infantry would be to the British forces what the Cossack is to the Russian, with that superiority that a better all-round military training gives. Our Indian cavalry, although undoubtedly an arm capable, if necessary, of great mobility, cannot be classed in the same category as the Cossack. In every respect as cavalry the former are far superior to the latter; but for dismounted fighting the Cossack has the advantage that the rifle confers when pitted against the carbine. But, on the other hand, mounted

infantry, irrespective of other important qualifications, is superior to the Cossack for dismounted fighting, in that his dress, arms and equipment are specially adapted for dismounted work, whereas those of the Cossack are not. For mobility perhaps the Cossack is not to be equalled, so inured is he by habit and practice to moving independently of transport and commissariat, carrying all that he and his horse require, for a time at least (to be supplemented, of course, from the resources of the country he is operating in) on his horse's back. Our soldiers, British or Native, are not habituated to moving thus independently; but there seems no doubt that our Indian cavalry and our mounted infantry could (provided they are properly equipped) prove themselves in point of mobility no mean rival of the Cossack. The recent long-distance rides (see Paper by General Bengough in No. 66 of the Journal of the U. S. I. of India and the Report compiled by Captain Dean-Pitt), which are the outcome of a General Order by H. E. the Commander-in-Chief in India (G. O. C. C., dated 2nd June, 1886), are an earnest of that. But our Indian cavalry is not, as has been already pointed out, so equipped as to be a match for the Cossack under all circumstances and in all places. When Anglo-Indian troops meet Russian it will be in Afghanistan, in Persia, or possibly in or towards the Caucasian Province. The Cossack will certainly be freely used for purposes of reconnaissance and raiding on our communications. Our Indian cavalry alone might possibly meet with discomfiture if it encountered Cossacks on ground unsuited to cavalry movements. To obviate such a mishap a combined force of cavalry and mounted infantry would prove effective. Recent writers on mounted infantry have specially dwelt on its value as a support to cavalry; and this is a case in point.

In all recent campaigns, whether in South Africa, Egypt, the Soudan or Upper Burma, mounted infantry has always, to the best of my knowledge, been raised and organised hurriedly to meet a sudden emergency. Naturally corps or companies so raised must necessarily have had to contend with many disadvantages, which might have been obviated had some adequate system of organisation been previously set on foot. There was little or no time for selecting the best men, or for giving them even a short course of drill and riding school, and as for equipment whatever came to hand first was impressed into the service. A man was given a pony, saddle and bridle, and then expected to go and do what he was ordered to do and learn his work in doing it. During the last seven or eight years the record of the services of the mounted infantry has, despite all initial drawbacks, been a brilliant one, so much so that the term "mounted infantry" conveys *per se* the notion of a *corps d'élite*. If such is the case, without a previous organisation and training, we may justly anticipate that a still more brilliant record of service will be the result when mounted infantry has become a recognised branch of the standing army. I say we may justly anticipate that such should be the case; but it is by no means a certainty that an improvised article may not prove superior to one most carefully formed and fashioned for a special purpose. So many things, so many controlling influences go

to constitute an efficient unit of the army. The officers and men may be good and well trained, but, to take mounted infantry as an instance, they depend on the Ordnance Department for their arms and ammunition, on the transport for their animals, and on some department or other for their saddlery. Any one of these component parts may be unsuitable or defective, and so impair the efficiency of the unit. Still an equipment based on practical experiment, and the treatment, application or use of which the men have been beforehand taught to understand, should prove superior to one improvised on a moment's notice; and *ceteris paribus* a trained and organised mounted infantry should be as superior to the offspring of a sudden need as a well-born-and-bred infant to a foundling. Still the foundling sometimes makes the better man of the two. However, now that mounted infantry is a question that is being taken up in earnest by the military authorities, we may expect ere long to have an opportunity of noting the working of a trained body of that arm and of comparing its performances with those of the extempore production of the past.

A point that is frequently and forcibly dwelt upon by most writers on mounted infantry is the difficulty of preventing that arm from degenerating into inferior cavalry. They instance the "Dragoons" of the early part of the century. I cannot but think that, as long as none but trained infantry soldiers are drafted into mounted infantry, that arm will not deteriorate into bad cavalry. In the recent operations in South Africa many cavalry soldiers were, I believe, employed as mounted infantry. Cavalry officers and non-commissioned officers may with advantage be employed as instructors of mounted infantry, but I do not think that the presence of a large number of cavalry soldiers in the ranks is either advantageous or desirable. The officers and men of mounted infantry should all, or almost all, be selected from the infantry. Naturally those officers would be selected who are good riders and have some knowledge of horse management. Knowledge of horses, however, unless combined with other essential qualifications, both of body and mind, will not make a good officer of mounted infantry. Infantry officers would have no tendency to turn their corps into a bad caricature of cavalry. Any mounted infantry that have operated with cavalry have very soon learned that they cannot possibly compete with that arm in its particular sphere and in good country. They are neither armed, mounted nor equipped for such work. Their best chance of doing good work and earning distinction is to confine themselves to the work for which they are intended. Cavalry can no more compete with them in their proper sphere than they can with cavalry in its own sphere. The infantry soldier with his rifle and bayonet is more than a match for the dismounted trooper with his carbine and his sword dangling between his legs. Or, if the sword be left attached to the saddle, the trooper is helpless for close-quarter fighting. In future wars between European powers we may, I think, expect to see mounted infantry used as an auxiliary of cavalry just as R. H. A. batteries now are; and it will also be employed for scouting, reconnoitring and falling on the enemy's

communications. In this latter duty it will become a substitute for cavalry without usurping the rôle of the latter. It will be acting *for*, not *as*, cavalry. When working with cavalry it will be useful either to protect it from the enemy's infantry or to support it by its rifle-fire against the enemy's cavalry.

Now, although it is conceded that mounted infantry is not intended to act as cavalry, I do not admit that it should never overstep the narrow limits within which some wish to confine it. It is argued that, if it is once allowed to act as cavalry, it will insensibly degenerate into bad cavalry. Why not argue that cavalry acting as infantry will degenerate into bad infantry? As a matter of fact dismounted cavalry is merely inferior infantry, and *vice versa* mounted infantry can at best be but inferior cavalry. Inferior however as the latter may be, there are occasions when its worst performance as cavalry may be better and more effective than its best as infantry. In Upper Burma the mounted infantry has been very frequently employed as *quasi-cavalry*; and where sword-bayonets had not been supplied the men in some companies were all armed with captured *dahs* (Burman swords). What is the most effective way of inflicting loss on a flying foe in a fairly open country? Is it best to dismount and fire a few random shots (probably without effect), or to scatter and pursue mounted? Practical experience has proved that the latter is the best. What has answered in Upper Burma will probably be found to answer in other countries and against other enemies. It should rest with the officer in command to decide at the moment whether mounted infantry can be most effectively employed, mounted or dismounted. Where adequate resistance is encountered it must adhere to its infantry rôle. If a body of the enemy of inferior strength, and especially if in retreat or flight, is encountered, then to attack or pursue mounted is most effective. In some cases a small body may dismount to attack and break the enemy, the remainder being held in reserve mounted and ready to pursue the enemy when broken. If mounted infantry is to act mounted it must be suitably armed. But of arms and equipment more anon.

The most recent writers on the training and organisation of mounted infantry are Major Hutton in No. CXXXV of the Royal U. S. I. Journal and Lieutenant G. J. Younghusband in No. 65 of the Journal of the U. S. I. of India. To the experiences previously gained in South Africa, Egypt and the Soudan may now be added those gained in Upper Burma, where the conditions of warfare have been of a quite peculiar type. No daring foe like the Zulu and Arab had to be contended with. Up to the close of the rainy season of 1886 the Burman certainly did show signs of a certain amount of spirit and enterprise, and had the courage both to resist and attack our troops. Then in October, 1886, came the reinforcements, and ere the end of the year there was no fight left in the Burman dacoit or rebel. His first aim then and afterwards was to keep at a safe distance from all British troops, and that aim attained to live at the expense of the villagers around him. The campaign in Upper Burma

of the winter of 1886-87 and the spring and summer of 1887 was nothing more than a pursuit. On both sides cunning was pitted against cunning, the one side to catch, the other to evade. Fighting in the real sense of the word (for it takes two to fight, as it does to make a quarrel) there was little. Still there is no doubt that the campaign in Upper Burma has trained, at least in a partial degree, not less than 2,000 men in the duties of mounted infantry. Men have learned to ride and to look after horses, and generally been accustomed to mounted infantry work. Here then we have a body of men ready to hand from which to form a corps of mounted infantry in India. Practical experience is worth more than any amount of theoretical instruction. Not to utilise the mounted infantry that has at much expense been organised and trained in Burma is to waste much valuable material. The material is there ready for use. Why delay using it?

There is, however, one experiment that has been tried in Upper Burma that should not be repeated, and that is the amalgamation of British and Native troops in one company. Corps or companies of British and corps or companies of Native mounted infantry may co-operate in the field just as battalions of British and Native troops are brigaded together. But let the two be distinct units. In respect of discipline, pay, rations, equipment, arms, ammunition, transport, stable management and every branch of interior economy let them be as separate corps. For drill and field operations they may, if necessary, be linked. It may be possible to have a company of 100 men, say 50 British and 50 Native soldiers. But the two half companies should be commanded each by its own officer, and in respect of every branch of interior economy should have nothing in common with the other. Oil will no more mix with water than British and Native soldiers will go through the routine of life in camp and barracks together without friction. The contact of the two is simply provocative of breaches of discipline, and punishments have to be awarded that would never have been required had the two discordant elements been kept asunder. I am aware that under certain circumstances Tommy Atkins and the Native soldier are very good friends. But when thrown together, as they have been in the mounted infantry in Upper Burma, reciprocal jealousies and susceptibilities are aroused, words are interchanged, words lead to blows, and blows to the cells. It is unfair to put temptation in a man's way. To amalgamate British and Native soldiers in one company is throwing temptation to misdemeanour in their way.

For the above reasons I consider that in future corps or companies of British and Native mounted infantry should be raised and organised independently one of the other.

One hundred non-commissioned officers and men is a suitable strength for a company of mounted infantry, and six such companies would form a battalion as large as the commanding officer could adequately control in the field.

Major Hutton recommends the formation in Great Britain of a brigade of four battalions, each battalion 530 strong, including officers. The estimate of the strength of mounted infantry required in India

should be framed proportionately to the military resources of the most powerful enemy that the Indian army may have to encounter. The greatest force that India might be called on to put into the field would be three or four army corps of 25,000 men each. Suppose that each army corps has one battalion of mounted infantry. To supply that we require two regiments of three battalions each, *viz.*, one regiment of British and one of native mounted infantry. One battalion of each regiment would be a *depôt* battalion, and furnish drafts as required to the two battalions in the field. If deemed advisable half a battalion of British and half a battalion of Native mounted infantry could be allotted to each of the four army corps. They might be attached to the cavalry division.

We want 1,800 men for each of these two regiments. Throughout 1886 several hundreds of British and Native soldiers were serving in the mounted infantry in Upper Burma; in the winter of 1886-87 their number was increased to 825 (established strength), and in the spring of this year (1887) the number was still further increased (I have no means of access to statistics, but I believe the 3rd Brigade alone has 500 or 550 rifles) to replace the cavalry, which after all was not withdrawn. It is probable that a large proportion of the troops in Burma will be withdrawn by the end of 1887, and then the mounted infantry will be in great measure broken up (to be replaced by mounted police). On their return to India most of the men thus practically trained will be available for enrolment in a corps of mounted infantry if it be decided to raise one. After weeding out inferior men we may estimate that about 600 British and 600 Native soldiers, mostly picked men and having the advantage of practical training in the field, can be thus obtained. The remaining 1,200 British and 1,200 Native soldiers can be raised from British regiments serving in India and from Native regiments. The best Native material will probably be obtained from the frontier regiments, *i.e.*, the Punjab and Belooch regiments. About 200 rifles of the 1st Belooch Regiment alone have been trained in Upper Burma to mounted infantry work.

The best authorities agree that mounted infantry should be composed of infantry soldiers, thoroughly trained as such, and subsequently instructed in riding and stable management. Lieutenant Younghausband makes some remarks about special musketry training; but mounted infantry requires no other musketry training than that which is, or shall be, hereafter found to render the infantry soldier most efficient. For the instruction in riding and stable management a special school is necessary. To attach mounted infantry men to cavalry for such instruction would never do. The cavalry would look on the whole thing as a bore, and as a natural consequence the mounted infantry would suffer both in efficiency and discipline. Major Hutton does not recommend the maintenance of a permanent corps, but the training in peace time of detachments from all regiments to be amalgamated into companies and corps in time of war. One, and the chief, objection to a permanent corps is expense. Expense is a matter that rests with the Finance Department. I think it will be generally admitted that a permanent corps will be found more efficient in war time than one composed of 20 or more detachments linked together

at short notice. The disintegrating effects of active service are only too apparent in a well-drilled battalion without trying experiments with a patch-work battalion. The Government of India has since April, 1885, found the wherewithal to add 10,000 British troops, three regiments of Native cavalry, nine or ten battalions of Native infantry, and an extra squadron in each existing regiment of cavalry, to the Indian army. It may possibly ere long find the wherewithal to raise six battalions of mounted infantry. In a patch-work battalion the commanding officer knows none of his subordinates, the men have no cohesion, the veterinary and farriery establishments are hurriedly and imperfectly arranged for and equipped, &c., &c., &c.; and that too supposing that complete equipment for the battalion (clothing, saddlery, arms, accoutrements, &c.) are all lying ready at the dépôt. Otherwise chaos is the word. It is very true that a very great deal may be made out of chaotic elements. Were it not so the mounted infantry in Upper Burma, and probably also in Egypt, Soudan and South Africa, would never have done the good work that they have. Necessity is the mother of invention. The needs of mounted infantry are many, and the improvisation of them is a great field for ingenuity. In the Regulations for Mounted Infantry, p. 38, we read: "It often occurs that mounted infantry have to be improvised during a campaign, when many of the special articles mentioned above cannot be obtained." The word "often" should, as far as the past goes, be altered to "always."

What a battalion of mounted infantry composed of detachments from twenty or more different regiments would be may be confidently foretold from the experiences gained from the amalgamated companies of the Upper Burmese campaign. Granted that the battalions would be all British or all Native, and that the detachments would be composed solely of well-trained men (which is improbable), I maintain that a battalion made up of so many diverse elements, with all the distinctions born of different regimental prejudices, ideas and influences, would be less efficient and less well-disciplined than a battalion on a permanent footing. The Native soldier especially declines to blend. Detachments from one Native corps cannot see why they should obey the Native or non-commissioned officers of another corps. The several detachments do not blend. Much of course may be effected by rigorous discipline; but it is unsatisfactory. I look on the position of the commanding officer of such a corps as one not to be envied.

I propose the following war establishment of battalions and companies of British and Native mounted infantry in India:—

BRITISH MOUNTED INFANTRY.

BATTALION.

<i>Officers</i> ...	{	1 Lient.-Colonel.	{	1 Paymaster.
		2 Majors.		1 Quarter-Master.
		6 Captains.		1 Surgeon.
		12 Lieutenants.		1 Veterinary Surgeon.
		1 Adjutant.		

<i>Warrant Officer</i>	...	1 Sergeant-Major.
		1 Orderly-room Sergeant.
* <i>Staff-Sergeants</i>	...	1 Quarter Master Sergeant.
		1 Paymaster Sergeant.
		2 Sergeant Farriers.
		6 Company Sergeants-Major.
<i>Non-commissioned Officers and Buglers</i>	...	18 Sergeants.
		24 Corporals.
		8 Buglers.
		512 Privates.
		8 Farriers.
<i>Rank and File</i>	...	12 Shoeing Smiths.
		12 Saddlers.

COMPANY.

One Captain, 2 Lieutenants, 1 Company Sergeant-Major, 3 Sergeants, 4 Corporals, 1 Bugler, 85 Privates, 1 Farrier, 2 Shoeing Smiths and 2 Saddlers.

NATIVE MOUNTED INFANTRY.

BATTALION.

		1 Commandant.
		2 Wing Commanders.†
<i>British Officers</i>	...	6 Company Commanders.
		1 Adjutant and Paymaster.
		1 Quarter Master.
		1 Surgeon.
<i>Native Officers</i>	...	6 Subadars (1 Subadar-Major).
		6 Jemaders (1 Jemadar-Adjutant).
		1 Havildar-Major.
<i>Staff Havildars</i>	...	1 Quarter Master Havildar.
		6 Havildars Riding Instructors. ‡
		6 Pay-Havildars.
<i>Non-commissioned Officers and Buglers</i>	...	24 Havildars.
		24 Naiks.
		8 Buglers.
		2 Farrier-Majors.
		510 Privates.
		8 Farriers.
<i>Rank and File</i>	...	12 Saddlers (Mochis).
		6 Shoeing Smiths (Nalbunds).

COMPANY.

One Company Commander (Captain or Lieutenant), 1 Subadar, 1 Jemadar, 1 Pay-Havildar, 4 Havildars, 5 Naiks, 1 Bugler, 85 Privates, 1 Farrier, 2 Saddlers, 1 Shoeing Smith.

* In peace time six Sergeant Riding Instructors may be added.

† Or three Double Company Commanders.

‡ In war time to remain at the depôt.

In time of war the number of British and Native commissioned officers can, if necessary, be augmented from the depôt battalion.

Now that the regulations for mounted infantry have been published it is unnecessary to say much about drill, dress, equipment, stable management, &c., in mounted infantry. A few remarks from personal experience may, however, be made.

The most difficult thing to teach mounted infantry men is to husband their steed's strength on the march and to take adequate care of it in camp or in the stables. In a regularly-trained corps, however, this should not be so.

Whether mounted infantry should be armed with a rifle or carbine depends on the nature of the enemy and of the country to be operated in. In Upper Burma carbines were sadly wanted. The heavy Snider rifle was a great encumbrance and drawback to the Natives. Against any European enemy and in open country, where long-range firing is possible, a rifle should be carried.

I think an improved form of sword-bayonet, more adapted for use as a cutting weapon, should be devised for mounted infantry.

Saddles of the pattern used by mounted officers of infantry, with wallets, panels, saddle bags, &c., should be supplied. A mounted infantry man ought to be so equipped that he can carry kit and food enough for himself and grain for his horse for several days. Bad saddlery will ruin the efficiency of any mounted infantry.

In Oriental countries, especially in the hot weather and in countries where rain is not excessive, mounted infantry are especially useful. The British soldier cannot do long marches in great heat, and even the Native soldier has to succumb occasionally. But mounted on ponies both arrive at the scene of action comparatively fresh.

The error of raising bodies of mounted infantry at a moment's notice must surely be patent to all. It simply means bad equipment, bad saddlery, and perhaps bad arms and bad mounts. When to these are added men untrained to the work surely we must wonder that a machine so full of imperfections should have turned out such good work.

A battalion of mounted infantry should have its own mule transport complete; and care must be taken that the saddles fit the mules. A Burmese pony was simply lost in the Regulation Ordnance Pack-saddle.

The training of mounted infantry is fully detailed in the Regulations. I would suggest, however, that mounted infantry be practised in manœuvring with cavalry and horse and field artillery.

CAVALRY v. MOUNTED INFANTRY.

By LIEUT. W. W. NORMAN, 2nd Punjab Cavalry.

HAVING read with very great interest the paper on Mounted Infantry, written by Major Hutton, King's Royal Rifles, in Vol. XXX, No. CXXXV, of the Journal of the Royal United Service Institution, I venture, as a cavalry officer, to express my opinion on the formation of corps of mounted infantry, from a cavalry point of view. Should it ever be decided to form corps of mounted infantry, they will, I feel sure, be formed and used to the very great detriment of cavalry, which I am convinced is capable of performing all that is expected from these hybrid corps. I may go further and say that, whereas the experiences of the last campaigns in Europe and the American War of Secession have not shown the necessity of raising a mobile infantry mounted on ponies, this being amply proved by the fact that neither Germany, Russia or France, have thought fit to raise such corps, yet it has, on the contrary, been most clearly proved that cavalry are able to fight on foot as well as on horseback, that if the object cannot be gained by the *arme blanche* then cavalry must attain it by the use of their carbines.

Major Hutton lays down three points, which he claims would be fulfilled by the creation of corps of mounted infantry. Taking each of these separately we find the first to be—

"To provide an improvised substitute for an expensive cavalry in small and hastily-organised expeditions."

To answer this point it is necessary to clearly understand what the word "substitute" means. Are we to take it to mean that cavalry are to be literally put aside and their places taken by infantry? Can Major Hutton possibly mean that cavalry, being an expensive arm, it is advisable not to use it, not to expose our carefully trained troopers to the risks of being killed? It would indeed be a strange policy and quite at variance with British ideas to expensively equip and train a body of men for the express purpose of playing a particular rôle in warfare, and then when hostilities commence to shun sending them forth to do their own work and so gain the experience that is their due. I am inclined, however, to think that Major Hutton cannot mean "substitute" in its literal sense, but that he means "auxiliary." It, however, cannot surely be that he considers our proportion of cavalry so small that we have not enough for one of our small expeditions. Surely, if England cannot, then India could supply cavalry sufficient for an expedition to any place in Africa, which is to a great extent our theatre of small expeditions. It cannot be said that it would have been too great a strain on our resources to have supplied to an army in Egypt one more British and two more Native cavalry regiments. That mounted infantry have, wherever employed, been successful, it

cannot be denied ; but we must bear in mind that they have never yet had to fight against cavalry, so the experiment has not yet been really tested. The success of the Boers, who were, to a great extent, simply mounted infantry, lies in the fact that we had not a sufficient number of cavalry to act against them. Had more cavalry been employed, the tale of our reverses might never have been told.

I quote the following from Major Hutton's paper :—

"Our German critics ask cynically : Why do you create a hybrid of "hasty and therefore doubtful organization when you have already "cavalry and infantry ? Why make infantry do cavalry work ? To "which queries we, with the experience of small wars conducted at 5,000 "and 7,000 miles away from England, reply that our army being "so small the men composing it must be prepared to perform duties "of a varied nature as emergencies demand. In North America we "have to march in snow-shoes or portage boats ; in South Africa we "must swim rivers, drive ox-wagons and ride half-broken horses ; in "India and in Egypt we have to march over trackless deserts under "the fierce rays of a tropical sun, to ride camels and to row and portage "boats up well-nigh impracticable cataracts."

Now can we take this as an answer to the cynical German critic ? The question asked is : "Why make infantry do cavalry work ?" Has Major Hutton answered this ? We can emphatically say, no. He has simply enumerated the various duties a British soldier is called upon to perform, and the British soldier in Major Hutton's eyes is apparently simply the infantry soldier to whose lot fall all the above enumerated toils and dangers. Can the cavalry trooper not claim to be considered a British soldier, and asked to be allowed to take his share of the various duties incident in our small expeditions ? Any duty entailing the mounting of a soldier on a horse, galloway or pony, belongs essentially to cavalry. Riding half-broken horses or ponies, rushing camps, capturing dacoits, scouting, etc., are not duties within the province of infantry. Until it can satisfactorily be proved that an infantry soldier can ride a half-broken pony better than a cavalry man, and that he can better perform the duties of the reconnoitring veil, or that cavalry have proved themselves unable to fight on foot, then we must most certainly consider that the question, "why make infantry do cavalry work ?" remains unanswered.

Turning now to the second point—"To provide for a campaign on a large scale an efficient auxiliary to our cavalry."

To show the necessity for forming this auxiliary, Major Hutton points out how deficient in cavalry a British army of 60,000 men would have been had it been necessary in the spring of 1885 to have sent one to Asia Minor. Allowing it to be the case that we could not have sent out a proper proportion of cavalry, it cannot be allowed that we would have had an excess of infantry, from which to form this auxiliary. It must be borne in mind that Russia will not mind how many troops she sends to be slaughtered ; she might not at a time, owing to the want of supplies, be able to put more troops in the field than we could ; but here the difference ends, for while she could

with care replace an army of 60,000 men at least five times, we could barely do so once. The cry with us would not be, "infantry are in excess;" it would much more likely be, "send us more battalions." It is utterly useless to imagine that, for a campaign against any Continental power, England could call on her infantry to supply an auxiliary to her cavalry. That our cavalry should be increased there can be little doubt, but any such increase must take the form of a corps, which shall be part and parcel of the cavalry arm itself. A very inexpensive method of adding to the strength of cavalry would be to attach a dismounted squadron to each regiment. On the outbreak of hostilities these squadrons could be embodied and formed into new regiments, which it might be necessary to mount on galloways or ponies.

I quote the following extract from Colonel Home's *précis* of *Modern Tactics*, which it would be advisable that advocates of mounted infantry should lay to heart :—

"However desirable it is that officers should know more than their own branch of the service, and should understand the nature and action of other arms, yet it is a mischievous error for any arm of the service to seek to undertake the duties of others."

The third point is—"To provide a force of selected infantry sufficiently mobile to act as such in conjunction with cavalry."

Major Hutton here quotes Jomini on the advantage of having several battalions of mounted infantry. I will quote the same para. in full, from which it will be seen that Jomini is very careful to express no opinion which could be laid down as an axiom. On the contrary, the whole paragraph clearly points to the fact that it is possible to make cavalry fight as well on foot as when mounted; and though on the one hand he points out that the French cavalry were not a success when employed dismounted, yet he very emphatically states that the Turkish cavalry were able to fight as well dismounted as mounted. The paragraph is so full of interest that I quote it in full :—

"Opinions will be always divided as to those amphibious animals called dragoons. It is certainly an advantage to have several battalions of mounted infantry who can anticipate an enemy at a defile, defend it in retreat, or scour a wood; but to make cavalry out of foot soldiers or a soldier who is equally good on horse or on foot is very difficult. This might have been supposed settled by the fate of the French Dragoons when fighting on foot, had it not been seen that the Turkish cavalry fought quite as well dismounted as mounted. It has been said that the greatest inconvenience resulting from the use of dragoons consists in the fact of being obliged at one moment to make them believe infantry squares cannot resist their charges, and the next moment that a foot soldier armed with his musket is superior to any horseman in the world. This argument has more plausibility than real force; for, instead of attempting to make men believe such contradictory statements, it would be much more reasonable to tell them that, if brave cavalry may break a square, brave foot soldiers may resist such a charge; that victory does not always depend on the superiority of the arm, but upon a thousand other things;

"that the courage of the troops, the presence of mind of the commanders, the opportuneness of manœuvres, the effect of artillery and musketry fire, rain, mud, even have been the causes of repulses or of victories ; and finally that a brave man, whether on foot or mounted, will always be more than a match for a coward. By impressing these truths upon dragoons they will believe themselves superior to their adversaries, whether they fight on foot or on horseback. This is the case with the Turks and the Circassians, whose cavalry often dismount to fight on foot in a wood or behind a cover, musket in hand, like foot soldiers."

Again Major Hutton quotes General Rosser of the American Army, who, after the conclusion of the American War of Secession, stated :—

"The cavalry soldier should never be dismounted to fight if you expect him to ride over masses of infantry, and he should be educated to believe that nothing can withstand a well-executed charge of cavalry."

Now was this the experience of the American War ? Does not the very last fight in that terrible campaign incontrovertibly refute this ? I refer to the Battle of Five Forks near Dinwiddie, the most glorious example of cavalry acting dismounted. Besides this there are many other examples in which cavalry successfully maintained a combat with their fire arms.

I find I must, at the risk of being considered tedious, quote one more extract from Major Hutton's lecture. It is as follows :—

"I venture to submit that as a certain proportion of artillery is considered indispensable for the effective support of cavalry, so also is a proportion of carefully selected and mobile infantry necessary. The enormous power and increase of range in infantry fire must necessitate the employment of infantry to protect and cover the movement of cavalry from an enemy's infantry ; and I feel sure that such will be found the case in the next campaign between civilized powers. The great consensus of opinion points to the fact that cavalry cannot be used effectively as infantry."

We can form no opinion of what will occur in future campaigns, unless that opinion be based on the experiences of past campaigns. It would be hazardous to create a new arm which has only been tested against undisciplined and savage troops, and which has not passed the grand test of having been opposed to cavalry. The experiences of 1866, 1870, 1871 have not taught the victors or the vanquished that there is any necessity of forming a mobile infantry, such as Major Hutton proposes. That great strides have been made in the increase of range and accuracy of firearms is well known, but surely cavalry has also a claim on the inventions of science, and may ask to be supplied with a firearm which will render it independent of an infantry support. The employment of infantry to protect and cover the movements of cavalry would be a most unwise and foolish act. It would have the effect of utterly demoralizing cavalry if they were taught to imagine that they needed protection. A cavalry man should be taught that his first weapon is the sabre, and that if he is ordered

to attack infantry or artillery he must endeavour to do so mounted, but that failing this he must attain his object by dismounted action, relying then on his carbine and not on the infantry soldiers' rifle. That the great consensus of opinion does not point to the fact that cavalry cannot be used effectively as infantry is but shown from the following extracts from the German Instructions for Cavalry by Major General Von Schmidt :—

"But the experiences of the last campaign have proved irrefutably that it is indispensably necessary that cavalry should to a certain extent be able to fight on foot, if it would be prepared to fulfil all the tasks which, without demanding too much from it, will in certain situations fall to its lot in the field.

"It cannot too often be repeated that the main thing is to carry out the mission in hand at any price, if possible. This should be done mounted and with the *arme blanche*; but should that not be feasible, then we must dismount and force a road with the carbine.

"I am convinced that cavalry would not be up to the requirements of the day if we were not able, under certain circumstances, to fight on foot, nor would it be worth the sacrifices that it costs the State. Independent and successful action of cavalry divisions is not conceivable unless such cavalry is capable of maintaining a combat with firearms, offensive and defensive, by whole regiments either for the attack of localities or for the defence of their cantonments.

"The drill regulations of Frederick the Great for his cavalry required not only that they should be capable of holding positions and villages against an enemy, but that they should be able to attack and master such places as churchyards, etc."

Corps of Mounted Infantry are organized for the following purposes :—

- (1) To provide an auxiliary to our expensive cavalry.
- (2) Being more mobile than infantry to seize and hold temporarily advanced or important points until the arrival of infantry.
- (3) To act in country where cavalry mounted on big horses cannot act.

I propose to show that cavalry with but slight alterations in its present system of organization, equipment and armament is capable of fulfilling all the abovementioned points. I must here take the opportunity to state that my suggestions apply primarily to native cavalry, that being the arm of the service to which I have the honor to belong.

(1) *To provide an auxiliary to our expensive cavalry.*

With regard to this point I would urge that since any such auxiliary must be part and parcel of the cavalry arm itself, every regiment should during peace have a proportion of dismounted men included in its strengths. This proportion should consist of an extra squadron, but for reasons stated further on I am afraid I must limit myself to saying an extra troop. The men forming this dismounted troop would of course be on a reduced rate of pay. Vacancies in the mounted squadrons would be filled by men from the dismounted troop,

the training of which would in no wise differ from that of the rest of the regiment. Arrangements would be made regimentally for the instruction in riding of this troop. All first enlistments would be made into it. The men should be taught to know that only the very best soldier would get a mounted vacancy, seniority in the dismounted troop being no claim whatever. It should also be laid down that no man, who had not for two years previously qualified as a first class shot, should get a mounted vacancy when it occurred.

The dismounted troop would be for all purposes of instruction and interior economy under the adjutant. To defray the extra expenditure that the State would be put to in raising this dismounted troop, I would advocate a change in the system of grass-cutters.

This system, as it now stands, consists of one grass-cutter and pony to every two sowars. The pay of a grass-cutter is Rs. 6 per month, his employers paying Rs. 3 each. In a native cavalry regiment on the present establishment of 576 sowars there are 283 grass-cutters, who at Rs. 6 each cost the State or the sowar—it matters little which—the monthly sum of Rs. 1,698. The pay of each sowar should be reduced by Rs. 3 a month, that being the sum he receives from the State for transmission to the pocket of his grass-cutter. The pay of a sowar being reduced by Rs. 3 per month the State should take on to itself the payment of the grass-cutters, and, instead of allowing one grass-cutter to each pony, reduce the number by half and make each syce or grass-cutter attend two ponies. By thus taking their payment into its own hands, and reducing the number of grass-cutters to half the present establishment, the State would make a saving of the pay in round numbers of 140 grass-cutters, i.e., of Rs. 840 per month, which would go a long way to the cost of defraying the expenses of the dismounted troop. The grass-cutters, who would now receive their pay direct from the State, would be placed on the same footing as transport drivers.

Ponies would be supplied by sowars as is done now at their own expense; they would, however, be kept in separate lines and be under the charge of the transport officer. A couple of old sowars per troop might be told off to look after the ponies of their troops in the same manner that the darogha looks after the horses. A monthly deduction from the pay of each sowar would be made for cost of ponies' feed, etc. With proper regimental arrangements there should be no decrease in the supply of grass, and with castrated ponies no difficulty should arise in their management when used to transport baggage, etc.

This plan would not only, as I say, help very materially towards defraying the cost of the extra troop, but would reduce the number of camp followers, a very serious question in itself. And to those who cling to old traditions I would point out that the recent order for the castration of ponies can only mean that at some future date, perhaps, the campaign will see the issue of a fresh order ordering perhaps a very much greater reduction in the number of grass-cutters than I have suggested. Let us then try and see if we cannot keep the money now expended in the grass-cutters' wages in the regiment and

turn it to account in increasing our efficiency. I may add that the sowar would not be a loser as the money would go indirectly to his pocket ; his sons and brothers could be enlisted at once instead of hanging on as ommedwars.

The pay and establishment of the dismounted troop would be as follows :—

No.	Establishment.			Rate.			Amount.		
1	Jemadar, mounted	...	...	60	0	0	60	0	0
1	Kote Duffadar, mounted	...	...	47	0	0	47	0	0
6	Duffadars, mounted	...	...	38	0	0	228	0	0
1	Pay Sowar, mounted	...	...	33	0	0	33	0	0
70	Sowars, dismounted	...	...	8	6	0	560	0	0
2	Farriers only in time of war	...	...	27	0	0	0	0	0
TOTAL Rs.				...	...	...	928	0	0

The jemadar would be an assistant to the woordi-major and should be an especially selected native officer ; he should have been through a six-months' course of instruction with a British cavalry regiment. In the same manner all the duffadars should also be passed instructors.

The benefits arising from this addition of a dismounted troop to each regiment individually and to the State would be as follows :—

- (1) The dismounted troop would be a training school, from which vacancies in the mounted ranks would be filled up ; the men composing it being longer under instruction would be better fitted to take their places on a vacancy occurring in the mounted squadrons.
- (2) On a regiment being ordered on service the dismounted troop would form the depôt, and all actual vacancies would be filled up to enable the regiment to march out with its full complement. Men in hospital, old sowars unfit for further service and others might be transferred to the dismounted troop, the new promotions taking over their horses, accoutrements, etc.
- (3) Without incurring much extra expenditure the State would have at its disposal on the outbreak of hostilities a body of men ready trained and available, not only as a reserve to fill up casualties, but should it so wish could collect these dismounted troops and form them into new regiments of cavalry, or mounting them on ponies raise light bodies of men to act in a great measure dismounted.

To recapitulate I hope I have shown that without much extra expense, albeit with perhaps some extra trouble in the question of grass supply, the State would provide itself with a very efficient auxiliary to its cavalry. Among the 26 regiments of native cavalry on the Bengal establishment the addition of a dismounted troop would mean the addition of 1,975 ready trained men. If this system was extended to British and Native cavalry alike to the extent of a dismounted squadron, the State would have at its disposal a force of close on 10,000 men, which on declaration of war it would only have to provide with horses or ponies as most suited to the exigencies of the campaign and to the country in which called on to operate. I have, however, only proposed it to be applied to regiments of native cavalry, and to the very limited extent of one troop per regiment, as having urged the adoption of the system it becomes my duty to show in what way the State would be able to meet the extra expenditure without increasing the budget, and with my extremely limited knowledge of military expenditure I am unable to put forward a scheme of any greater magnitude.

- (2) *Being more mobile than infantry to seize and hold temporarily advanced and important points until the arrival of infantry.*

Owing to the increased range and accuracy of firearms it is now considered by many to be impossible for cavalry to take its old place in line of battle. But, because it may not perhaps be now able to perform the dashing charges of old, none the less is its presence in a campaign, and even on the field of battle itself, as a fighting factor as necessary as it ever has been. The days of cavalry are not passed; there is still a glorious future before it—a future born of the American War, which showed the world what cavalry could do by being the eyes, ears, feelers and impenetrable veil of an army, to witness Stonewall Jackson's campaign in the Shenandoah Valley, where with a force amounting to 13,000 men he successively defeated Milroy, Banks, Fremont and Shields, whose forces aggregated 84,000 men. During the 35 days that this campaign lasted his army marched a total distance of 245 miles. The fruit of this campaign was the repulse of McClellan's army on the Chickahominy. No one will gain-say that these tremendous successes were due in great part to Ashby's force of 1,000 cavalry, who, during those 35 eventful days, seemed ubiquitous.

Again in a perfectly different fashion, opening out for itself a new line altogether, it showed that even on the battle field itself it was still able to maintain its place. Wilson and Sheridan were the demonstrators.* The former with a force of 12,000 cavalry was ordered to destroy the military resources of Alabama. The expedition was to last 60 days. Each trooper took with him five days' ration and 24lbs of grain, a pair of extra horse shoes and 100 rounds of ammunition. There was also a pontoon train; additional supplies were carried in wagons. The troops were armed with the Spencer carbine. With this force Wilson made a raid from Eastport (Miss.) to Macon (Ga.) burning stores, bridges,

* See Draper's History of the American War.

foundries, etc., *en route*. Selma, which was strongly fortified and garrisoned with about 7,000 troops, he carried by assault, April 2nd, capturing 32 guns and 2,700 prisoners. On April 12th, Montgomery surrendered; here Wilson destroyed 5 steam boats, several locomotives, an armoury and several foundries. Entering Georgia he captured Columbus, taking 52 guns and 1,200 prisoners. A confederate ram, carrying six 7-inch guns, was destroyed with the navy yard, arsenal, factories, etc. On the 20th Macon surrendered.

During the campaign on the Appomatox, when Lee turned to bay at Five Forks and drove Sheridan back towards Dinwiddie, the latter dismounted his cavalry at Chamberlain's Creek, and deploying them on foot held Lee in check until the arrival of the 5th infantry corps, when the enemy, fearing that their retreat might be cut off, abandoned their position in front of Sheridan. In this action the infantry took no part whatever. The next day the same cavalry, who had fought so well the day before on foot, performed many gallant charges, conclusively proving that a trooper does not lose faith in his sabre from the fact of using his carbine dismounted. The immediate effects of this battle at Five Forks was the surrender of General Lee at Appomatox Court House a few days after and the consequent termination of the Civil War. To cavalry acting dismounted was their success due.

My aim in giving these examples has been to show that cavalry acting dismounted are able to achieve very great and important results on the field of battle; and, if this point be conceded, then I ask why should a force be raised more mobile than infantry; in what would its mobility consist? The answer is Major Hutton's, "the increased power of locomotion which a horse, pony, mule or camel may give him." We have cavalry already possessing this mobility; what is wanted in addition is the power to seize and hold important points until the arrival of infantry. This is gained by the possession of a good firearm, by a knowledge of its use, and by an extended system of dismounted drill. There can be no doubt but that many cavalry officers—I am afraid I must say the majority—are averse to dismounted work. But let them beware how, in giving way to what is nothing but pure sentiment, they pave the way for a total abolition of their arm. Once let the idea take firm root that cavalry dismounted cannot obtain as great and important results as hybrid corps of mounted infantry, it is not much to suppose that it will ere long be claimed that infantry mounted on ponies can replace them to a very great extent. In fact this is no alarmist's cry as the following extract from Major Hutton's paper shows:—

"Two or three battalions of picked infantry mounted on Syrian or Karamanian ponies would be able to relieve cavalry of many of their most trying and irksome duties, such as vedette and outpost work, orderly duty and escort."

This is the thin edge of the wedge, and it behoves cavalry men to see that it is extracted before we see ourselves supplanted on the battle field, and in the reconnoitring veil, by mounted infantry.

The possession of a good firearm is an imperative necessity. A long rifle accurate up to 1,200 or 1,500 yards is not wanted ; besides it has the damning defect of not being able to be carried in a bucket or slung over the back. A short firearm with adjustable magazine, which will shoot true up to 800 or 1,000 yards, is all that is wanted, as the dismounted tactics of cavalry would be to get within that range as soon as possible. The advantage gained by mobility would be rendered useless if a desultory fire was kept up at long ranges. Besides the ordinary occasions, such as those laid down in Sec. 22, Part II, Cavalry Regulations, cavalry might with advantage be used to suddenly prolong a flank or in turn hurl themselves on the enemy's flank. If it is true that we are to be armed soon with the Lee-Warner carbine nothing more is to be said ; but failing this let us have the Martini-Henry, and I undertake to say that we can do anything capable of being done or that has been done by mounted infantry, either in Egypt or Burmah.

(8) "*To act in a country where cavalry mounted on big horses cannot act.*"

Both in Egypt and Burmah corps of mounted infantry were formed composed of detachments from different regiments. I presume therefore that the system of taking detachments from different regiments can have no objection. I would propose then that, should at any future date a body of men mounted on ponies be required to act in a country like Burmah, selected regiments should be called on to furnish a certain number of marksmen and first-class shots. There should be no trouble as to the taking care of the horses of men ordered away on detachment. There are always plenty of casters in a regiment which the Remount Committee are unable to provide for ; these should all be sold and the vacancies filled up by the horses left behind by the detachment. Further, should it be found that after filling up all such vacancies a surplus of horses remained, the balance might be distributed amongst other regiments at a valuation. A few spare horses, however, would be an advantage to spare remounts not of an age being worked hard. The next difficulty is to consider the supply of remounts to the detachments on rejoining from the scene of operations. To obviate any such difficulty I would recommend them being obtained from rearing farms on the principle suggested by Mr. Pringle, A.V.D. There are a very many old native officers who, for a very small pecuniary remuneration, would look after a small rearing farm near their homes.

If the scheme of a dismounted troop per regiment were in force, the difficulty as to taking care of the horses of the men ordered away on detachment would be simply *nil*.

Conceding that arrangements could be made for the care of the horses and where there's a will there's a way, it surely would be a far more sensible plan to take detachments from cavalry, and not from infantry ; there would then be no hurried training ; the men would come ready trained, ready to fall into their places, and there would be then none of that "irregular helter-skelter method of manœuvring" which Major Hutton complains of as being most difficult to combat in corps of mounted infantry in Egypt.

Mounted infantry are a gross infringement of the rights of cavalry, and it boots cavalry men to look seriously to this. We are the only true mounted arm ; we possess mobility, the power of attacking, dismounted as well as mounted. With reference to this latter point, and as a great conclusive proof that I am right in maintaining that cavalry can do all that is expected from mounted infantry, the fact stands out that mounted infantry have removed themselves from the category of infantry and aspired to be light cavalry by using dahs in Burmah and assegais in Zululand. The instinct of the horse-man was bound to turn to the *arme blanche*. The advocates of mounted infantry are at variance amongst themselves as to whether a weapon for defence while mounted should be carried ; but depend on it, whether it be sabre, assegai or dah, somehow it will find its way into the hands of the mounted infantry man. If so, what is he then but a cavalry man mounted on a pony for the time acting the rôle of an infantry man.

Mobility, being the rapid power of locomotion given to a man by his horse or pony, necessarily means that the horse or pony is able to carry the man about rapidly ; to be able to do this the horse or pony must be in good condition and well cared for. The knowledge to attain this cannot be expected from an infantry man. No mounted corps can possess mobility if the majority of the horses or ponies have sore backs. When a body of men take the field they are expected to come ready trained after long and careful preparation during peace. When, therefore, a body of light active troops, mounted on ponies, are next required to act in a country like Burmah or Egypt to rush camps, to capture dacoits, etc., I would suggest that detachments be taken from British and Native cavalry and not from infantry, and it surely is not too much for us to ask to do our own work.

Major Hutton draws a truly ludicrous picture of the dismounted dragoon or hussar struggling with clanking sword, or jingling spur, and there can be no doubt but that what he says is to a very great extent true. It is impossible to expect men in long boots to work effectively even over the best ground for any length of time. Long boots should be dispensed with and putties be worn in their stead.

The great difficulty a sowar has to combat when dismounted is to prevent his sword tripping him over, and all the time he is dismounted he has to keep one hand steadying the scabbard, for it is a fallacy to imagine that hooking up the sword obviates this liability to be suddenly thrown down, as even then it manages to work itself between the legs, and is continually slipping out of the hook. It is with no wish to foist one more gym on to the sowar, but with a sincere belief that the equipment I advocate would enable him to fight as free on foot as the infantry man, would enable him to hold his own against the bayonet while fighting dismounted, either in the plain or in a defile, up or down rocks or over boulders. Major Hutton says that the carbine and sword are no match for the rifle and bayonet ; this may be true as demonstrated

belt is very inconvenient to men acting dismounted, for, when suddenly lying down or getting up, cartridges are apt to fall out, and to obviate this sowars are wont to carry cartridges in their breeches pockets. If they find this is more convenient, it is our place to help them and do away with the pouch belt,

Method of carrying ammunition.

In Fig. 2 a small pouch marked "A" will be seen attached to the belt on the left hand side; this pouch should be made to hold ten rounds, which are quite sufficient for all practical purposes during peace; perhaps a more convenient way would be to carry the ten rounds in the bandolier fashion—five rounds on the right and five rounds on the left of the belt buckle.

For use on service a brown canvas waterproof bag capable of holding five packets of ten rounds each should be worn on the right side, the strap passing over the left shoulder and under the belt to keep the bag steady; to relieve the sowar of the weight of these fifty rounds the cartridges should, when the sowar is mounted, be carried in the holsters, and only taken out and placed in the bag when it was considered necessary to sling carbines.

Method of wearing the sword dismounted.

In Fig. 4 it will be seen that the sword is carried thrust between the belt and kummerband, but to keep it perfectly steady a small strip of leather should be sewn inside the belt, forming a frog, which would keep the sword firm. Fig. 5 shows this piece of leather. The sword worn in this fashion is no inconvenience whatever to a sowar when firing, sitting or lying down, and he is able to move over ground as easily as the infantry soldier. Should cavalry be called on to drive an enemy out of an enclosure, a wood, etc., at the point of the sword after having paved the way with their fire-arms, then the latter could be slung over the shoulder the same as when mounted to give freer play for swordsmanship.

In conclusion I hope it will not be considered too great presumption in one inexperienced in actual campaigning to have thus written on such an important subject. I have endeavoured to supply my want of practical knowledge by examples and quotations that none can gainsay. I do not wish for an instant to say that mounted infantry are useless; that they are not has been very thoroughly proved; but I claim that cavalry could have done the work as effectually, if not more so. During the Indian Mutiny General Olpherts, V.C., had a battery composed of men from the cavalry and infantry; they all wore their own uniforms, hussars, highlanders, etc., and General Olpherts says that if he had not had these men he could not have worked his battery. But examples like these are no precedent that one arm of the service should seek to do the duty of another arm. Among all the distinguished officers present at Major Hutton's lecture Major-General Sir Redvers Buller alone stood up as a champion for cavalry. The pith of all his criticisms lay in the following remark:—

"Now I cannot help thinking that in the English army we really do a great deal of injury to our cavalry by the use we make of mounted

"infantry, for in the late small expeditions the cavalry has to a great extent been kept away and have lost the experience that was their share."

If we wish to start a system of rapidly transporting a body of infantry from one point to another on the battle-field, etc., why not let us on field days and during manœuvres see how the following plan would act :—

"Occasionally to gain time the Turks mounted some of their infantry *en croupe* behind their spahis. Thus, early in the battle of Rymnik, when they had to contend with Marshal Suwarrow and some Austrians, a body of 6,000 Janissaries jumped up behind an equal number of Turkish horsemen and were carried at full speed to occupy a commanding eminence, of which the Austrians were also desirous of taking possession.*"

If such a proceeding was successful once it should be successful again.

As in the old days a cavalry commander saw his opportunity in a shower of rain, which damped the priming of the old matchlocks, so in future will he again find innumerable opportunities to break up corps of mounted infantry if they are ever really used in a campaign. Only, a very small handful of men, such as a small patrol of 10 or 15 men would create simply havoc among the led ponies. In attacking mounted infantry it would not be from the squadrons actually charging from whom the duty of scattering the led horses would be expected; they would confine their attentions to the cavalry escort, while small bodies of men would hurl themselves through the intervals, and go straight for the led horses or ponies. Lastly, if cavalry is to be called on to perform the new duty of protecting the led horses of mounted infantry, it will be seen that it must be proportionately increased to enable it to perform this new duty. So in the end we shall come to the fact that mounted infantry have been raised to supplement cavalry, and cavalry increased to protect mounted infantry.

* Cavalry : Its history and tactics. By Capt. Nolan, 15th Hussars.

INFANTRY TACTICS.

By CAPTAIN G. H. ROBINSON, 1/1 *Goorkha L. I.*

BEFORE deciding on a change in our infantry attack formation we should consider the *principles* arrived at in the several Continental armies which have had experience of modern warfare as affected by the fire of breech-loading rifles, and endeavour to adapt (not slavishly copy) them to the traditions and characteristics of our own army.

The Germans seem to have arrived at the following principles:—

1. That a direct attack to be successful must be made in several lines more or less extended, pushing forward at a quick step and gradually closing on the most advanced or firing line and carrying it forward with each successive reinforcement.

2. They lay great stress on discipline, especially fire discipline, in the fighting line. The advance of the several lines is made with the strictest attention to discipline, the bands playing and the colours flying, and the moral effect is supposed to be very great.

3. They hold that the admixture of not only companies but also of battalions and even larger bodies is unavoidable, and train their men to place themselves under the orders of the nearest officer without reference to the regiment in which he may be serving.

4. They do not believe that volley firing, except in the earliest stages of the attack, is possible.

As regards the Russian system:—

1. Skobelev found that the only way of successfully attacking a position defended by breech-loaders was in several lines of skirmishers successively reinforcing the firing line and carrying it forward with a rush.

2. They are of opinion that volley firing is the more advantageous way of employing rifle fire.

3. They also hold that the days of bayonet attacks are not by any means ended, and their men are trained to always keep the bayonet fixed when manœuvring, even at the earliest stages of the attack.

The French are coming round to their old national characteristic of *elan* in the attack, but we do not hear much of their fire tactics.

The Austrians are said to pay great attention to cover in making an attack, and their advance is considered slow in the extreme.

The principal point of difference between the German and Russian systems is independent *vs.* volley firing. The Germans are a close-thinking practical race, and they are not likely to have adopted independent firing without very good reasons. On the other hand the Russians have had later experience, and, if they found that volley firing was practically possible in the late Russo-Turkish war, we

ought not lightly abandon its very obvious advantages. These advantages are :—

1. It is easier to maintain discipline.
2. It is easier to control the fire both as regards volume and direction.

The traditions of our own army, before the days of the present extended order formation, were towards the maintenance of a very strict discipline, resulting in a most remarkable steadiness in battle, which steadiness was the admiration alike of our friends and foes. Let us develop this traditional characteristic of our army by adopting such a formation as will enable our officers to maintain the same strict discipline in action which our forefathers did before us in the famous Peninsular days. Given perfect discipline in the field, the present arms of precision, and infantry well trained in collective firing, the most extraordinary results could, I firmly believe, be attained from well-directed rifle fire. In the old Brown Bess days the disciplined fire of infantry created great havoc, and far greater results could be attained by the present arms if only the same discipline were maintained. The disappointing results of breech-loading rifle fire in action are probably due to the fact that discipline has been greatly relaxed in the "dispersed order" of fighting, and too much attention has been given to developing a formation suitable to the *natural* inclination of the individual soldier rather than to the disciplined steadiness of the mass.

Then, again, we must consider the effect magazine rifles will have on the tactics of the future. To me it appears that it will tend to necessitate a far greater attention than ever to discipline in the fight, not only in order that a better control of fire may be obtained, but also that the men may be kept in hand at a time when they will be exposed to a withering fire, the density and effect of which can hardly be imagined. Further, it must be borne in mind, that our infantry does not consist solely of highly-trained British soldiers. Our next war will probably see a considerable number of native troops engaged, and also perhaps Colonial militia and volunteers, who, if strict discipline is not maintained, will very soon degenerate into a mob. A formation then appears necessary which will be suitable alike to the British soldier and the native, to the regular and the half-trained auxiliary, a formation in which discipline may again play the leading part.

The question then arises whether the present extended order formation is suitable for maintaining a rigid discipline in action. There is no burking the question ; it is not suitable. There is very great difficulty in getting orders carried out in even a sham fight. What will it be in action when the men and officers are being knocked over by the dozen at a time ? Some military writers have gone as far as to suggest a return to the old "thin red line," but they appear to have overlooked one great principle in modern infantry tactics, namely, that only as many men as can use their rifles efficiently should at first be employed in the fighting line ; all superfluous men become mere targets to be shot down. We must then look for a formation in the fighting line somewhere

between "the thin red line," standing two deep, and the present extended formation, allowing four paces per file. A single rank with elbow room, say one pace per rifle, at once suggests itself. In such a formation discipline could be maintained quite as easily as in the two deep formation, while every man would be able to use his rifle with effect, whether standing, kneeling or lying down, which is not the case when two deep, as in the latter only the front rank can use their rifles in the lying-down position. The single rank with a man for every pace of front will, of course, be more vulnerable than the extended line with only one man for every two paces, but the advantages gained in stiffness and discipline would, I submit, more than compensate for the extra vulnerability. It must also be remembered that such a line is twice as powerful for offensive action by reason of its having twice the number of effective rifles. Again, as this line would be fairly thick from the commencement, the early reinforcements would not always appear necessary, and thus the units would to some extent be kept intact.

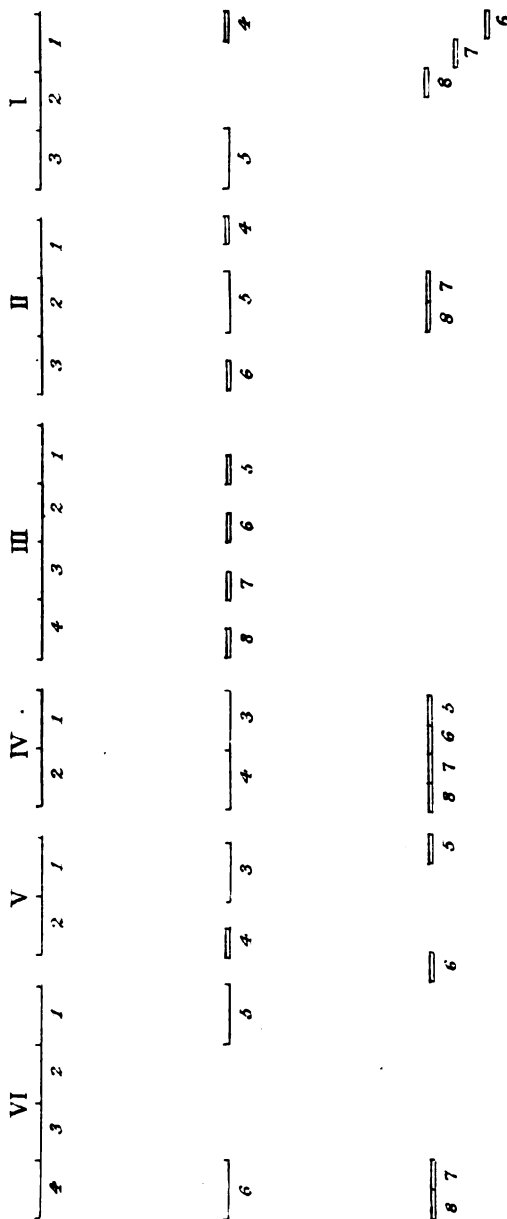
Again, with reference to fire discipline and the control of fire, it is generally admitted among British officers that volley firing is far and away superior to independent firing, and this opinion is borne out, as we have seen, by the Russians. We hold that a few rapid well-aimed volleys delivered at decisive ranges, such as the new magazine rifle will soon enable us to do, will have a far greater moral effect on the enemy than a greater number of rounds per rifle fired independently, because a greater number of men are struck down with one blow as it were and because fire discipline can be more easily maintained. But for efficient volley firing the "fire units" must be kept intact to the last; it is when *these* get mixed up that confusion takes place and wild firing commences, and this is exactly where the difficulty arises. Several systems of attack have been promulgated by officers whose aims have been to get rid of this difficulty, but they all seem wanting in practicability. All these officers endeavour to keep each unit, whether it be section, company or battalion, quite intact, and this is just what the Germans tell us is impossible. As has been already stated the Germans make up their minds to this admixture and train their men accordingly. Let us make up our minds to do the same and limit ourselves to preserving intact the "fire unit" only, which with us is the section varying from 8 to 25 men. But a section of 25 men is generally admitted to be too large for a "fire unit," and several writers have recently recommended that a company be "told off" into "groups" as well as into sections and half companies. The term "group," however, is applied in our drill to a "section of four." I would suggest therefore that, when a company has over, say, 30 files, it be "told off" into "half sections" as well as into sections and half companies. Thus strong companies of over 30 files would consist of eight and the weaker ones of four "fire units." These "fire units," whether sections or half sections, should be numbered off from right to left in the same way as the companies of a battalion, thus, "No. 1 fire unit," "No. 2 fire unit," &c. A single rank fighting line would then be divided into a number of fire units according to the number and strength of the companies

composing it, and the men of these "fire units" should be *drilled* to always feel inwards towards their centres, regardless of any gaps that may be created on their flanks. At drill, on field days and on every occasion when attack and defence is practised, men should be ordered to fall out and the remainder made to feel inwards instinctively. Officers and unit commanders should also be directed to fall out to represent casualties and the next seniors trained to readily assume the responsibilities of command. In this way gaps will gradually be made in the fighting line, and into these gaps the reinforcing "fire units" must insert themselves in *one body*, in single rank if possible, if not in two or more ranks, the object being to keep the units from mixing; opportunities will occur soon enough to admit of their opening out into single rank. In reinforcing, the principle should be observed that, although companies, battalions, or even brigades, become intermixed, the little knot of men forming a "fire unit" should be kept quite separate and intact until, through losses, they cease to exist. While on this subject of "fire units" I would suggest that the subaltern officers be relieved of duties of "guides" and "section commanders" as officers are not one too many for directing fire and maintaining discipline, while non-commissioned officers can, and do, perform the duties of "guides" and "section commanders" satisfactorily.

Again the words of command for volley firing might be greatly simplified. When practising firing rapid volleys it is difficult, and with some men impossible, to get out the long caution preceding the executive word "Ready." For instance "No. 1 section fire three volleys at four hundred and fifty yards" might be conveniently cut down to "First section, three volleys, four fifty," or just half the number of words for the nervous or indifferently trained "section commander" to stumble through. I have frequently seen a section commander quite half a minute getting through the caution, a length of time quite sufficient for him to miss a fleeting opportunity altogether. Then, with reference to the adjustment of the backsight, a single man fumbling with his backsight will frequently spoil the rapidity of the volleys of a whole section. I would suggest, therefore, that three volleys should be the rule and that the distance given should be estimated for the second volley; the first volley would then be fired at the head, the second at the middle, and the third at the feet, of an approaching object without altering the backsight. For firing at a retiring object it would be *vice versa*, the words of command in either case being "high, present," "low, present" or simply "present," as the case may be.

With reference to the number of companies to be sent into the fighting line to start with I would suggest that this is a question for the commanding or other senior officer to decide on the spot. It is absurd to lay down any hard and fast rule to meet every conceivable case which would occur in actual warfare, but, as a general rule, entire companies should be employed in preference to portions of several with their remainders in support; thus the attentions of the captains would be confined to the object attacked, to directing fire and to maintaining discipline instead of being divided between front

DIAGRAM I.



Scale. 1" = 200 Paces. 800 Paces.
 A Battalion = 8 Companies.
 A Company = 50 Files.

and rear, as it is the case at present. As four companies formed in single rank, with one pace per rifle, would occupy the same front as *ten* companies formed two deep with only 24 inches per file, it follows that it would never be convenient to place more than half a battalion in the fighting line at first, the other half battalion following at 200 to 400 paces in rear in such formation as its commander might consider advisable; or, only two companies might form the fighting line, the remainder following in one or more lines at the above stated intervals, each line having its own commander. Then, when the fighting line became checked, the next line in rear would close on it and carry it forward at a steady run. A reference to diagram No. 1 will show at a glance different ways of forming battalions in the "first line" of an attack. Battalion I is formed in three lines on a front of three companies, *i.e.*, eight men to every three paces. Here three companies form the first, two the second and three the third line. Battalion II is also formed with the same front and depth, but three companies are in the second and only two in the third line. Battalion III is formed in two lines on a front of four companies, having two men to every pace of front. Battalion IV is formed in three lines on a front of two companies, *i.e.*, four men to every pace of front. Here two companies form the first, two the second and four the third line. Battalion V is formed in four lines but with the same front and with the same number of men per pace as IV, two companies being in each line. Battalion VI is formed on a front of four companies but in three lines, two companies being in the second and two in the third line. Here there are two men per pace of front.

Further there is nothing in the formation here suggested to prevent the several lines of a battalion manœuvring exactly as a battalion two deep; they can advance or retire in *échelon* of companies, half companies, battalions or brigades; they can change front, form column, or even square, if necessary. In changing front at small angles, however, it would be the better plan to wheel up the base "fire unit" into the new alignment and then direct the others to conform independently by order of the unit commanders. In this way, if the line was firing, each unit could take up the fire again as it arrived in its place and directly its front was clear.

The following example (see diagram 2) will illustrate the conduct of the attack against a stubbornly-defended position.

A body of infantry, consisting of four companies of 24 files each, is directed to attack a given point in an enemy's position, the front available being represented by the width of the paper. Each company is told off into four sections or "fire units." It is found that the allotted lateral space is only sufficient for one company in the fighting line. No. 1 company is directed to form this line, and is opened out into single rank with a few inches between men and three paces between sections. No. 2 company is told off to form the first reinforcement, and follows No. 1 at a distance of 200 to 400 paces in such formation as its commander considers necessary. Nos. 3 and 4 companies follow as the main body further in rear. The officers all move out in front of their

respective commands, while the N.-C. officers follow in rear of their sections, keeping the men together and preserving the strictest discipline. When the fighting line is required to open fire its officers fall to the rear, and the captain orders the number of section volleys, pointing out the object on which fire is to be concentrated. The volleys having been delivered the whole line advances at a steady run (no racing), each unit moving by its own centre straight to the front regardless of gaps on its flanks. When from 50 to 100 yards of ground have been gained the line again lies down, and when the men are steady opens fire as before, and so on. In the meanwhile casualties have occurred; the men of the several fire units have felt inwards and gaps have been created; the fighting line is checked. The commander of No. 2 company, who has been steadily gaining on No. 1, now determines to reinforce. The company advances and, when within 50 yards or so, breaks into a steady run by word of command, the several sections being directed by their commanders towards the gaps in their front; the bugles sound "the advance"; the first reinforcement runs through the gaps in its front with a cheer and carries the original fighting line forward with it for another 50 or 100 yards. The line is then halted, steadied, and section volleys are opened as before. It will be observed on referring to the diagram that the right section (5) of No. 2 company has no room to get up in the fighting line, so halts and lies down in rear when the rest of the line goes forward. The reinforced line continues the advance as before under the command of the senior officer, the remaining officers dividing the front, until more losses occur, more gaps are made and the line is brought to a standstill for the second time. Sections (2) and (6) have suffered so heavily that the nearest officer has combined them into one, and sections (7) and (8) have found room to open out into single rank. The second reinforcement now takes place by No. 3 company, and the right section (5) of No. 2 company (which No. 3 has picked up and brought on with it) joining the fighting line in the same way as No. 2 did. Sections (5), (9) and (11) throw themselves into the gaps and carry forward the line, while (10) and (12), for whom there is no room, remain lying down in rear. More losses occur; sections (3) and (7) and (4) and (8) have been ordered to combine, and sections (5) and (11) have been enabled to open out into single rank, but there are still gaps, and into these sections (10) and (12) have thrown themselves. In this way the line has been brought up to assaulting distance. No. 4 company has come up in rear, and the order for the assault is given. This last company reinforces the line, wherever weakest, with a cheer, the drums beating and the bugles sounding "the advance." The whole line moves forward at a steady double, the men fixing bayonets (if not already fixed) as they move forward; the bugles sound and the drums beat "the advance" repeatedly, and each time the men cheer and quicken the pace until presently "the charge" sounds, when the whole line goes in with a rush. But suppose the attack does not succeed and is brought to a halt, a tremendous fire would probably be opened by the men without word of command, for

it must be remembered that their nerves would by this time be strung to the highest pitch, and perhaps they would maintain their ground for a few minutes. A "second line" in rear is at this time indispensable and would have to be brought up in order to force the position.

This, as well as every other, method of conducting an attack must be constantly practised at *drill* in order to obtain 'perfection ; first on open level ground, without firing, then on broken ground, and finally at field firing. Men *must* be directed to fall out at drill, as well as on field days, in order that those still left in the ranks may learn to close in instinctively so that gaps may be created, for without these gaps in the fighting line this system of reinforcing falls to the ground. It may offend the eye of the sergeant-major to see his parade ground dotted all over with men who have fallen out, but it is the only way to accustom men to casualties, and the more they are drilled to it in peace the steadier will they be in action, when the casualties are made by the enemy's fire.

It is quite possible that, when subjected to practical test, this system of reinforcing may fall through, in which case there is no help for it but to give up the obvious advantages of volley firing, as the Germans have been obliged to do, and drill our men to fire independently in a given direction a given number of rounds as steadily as circumstances will admit. It is the choice of two evils, and appears to me to be far less than the present one, which, immediately reinforcement takes place, entails confusion of commands, confusion of voices, and results in the men losing their heads and firing wildly and finally passing out of all control. When magazine rifles are issued the chances of wasting ammunition will be much reduced when firing independently. The ammunition should be made up into convenient five-round packets, and when the fire pauses take place the magazines would be filled by one of these packets being emptied into it. The men then, on getting the command to "commence fire," could not fire more than five rounds as often that the magazines would become empty, and they would not be allowed to load up again without word of command. Thus fire pauses would establish themselves without any exertion on the part of anybody.

SHELTER TRENCHES AND ENTRENCHMENT TOOLS.

By COLONEL W. LUCKHARDT, C.B., A.D.C.

TOGETHER with the progressive improvement in firearms there arose simultaneously the question as to what steps should be taken on the other hand to prevent the terrible losses inflicted by these arms of precision, and hence it has come about that the pickaxe and shovel are no longer solely employed in the preparatory stages of a battle, but have become important factors themselves on the battle field. Though it would appear that these questions should go hand in hand together, this has practically not been the case. Considerable attention has been paid to the way in which the deadly effect of the modern arms of precision should be counteracted, yet it must be admitted that a hesitation has always made itself felt to give such a system a full scope of development. The reason of this is not far to seek. The value of protective works is everywhere fully acknowledged, but there is a general fear to avail oneself too freely of the advantages offered by them, as the possibility has always presented itself that the profit thus gained may be more than counterbalanced by the disadvantages which are inseparably connected with the abuse of such a system; in other words there is a feeling of uncomfortableness that troops may cling too much to these protective works, which may therefore render them unwilling or half-hearted in the further progressive stages of a battle. There is consequently considerable difficulty to separate strictly the limits as to what extent the advantage should be utilised, and at what point abuse may be feared to result, so as to render them prohibitive. The proper solution of this question is evidently reserved for the future, since the experience hitherto acquired has not been sufficient to bring about a conclusion which we might consider satisfactory. However, although the correct solution may be veiled in doubt, the fact is clear that no army can neglect the subject without results, which, if not disastrous, might certainly call for regret that sufficient attention was not paid to it. As a prominent illustration we may point to the Turko-Russian war. Amongst the many evils which revealed themselves during that campaign not the least was the total want of portable entrenching tools. Owing to faulty tactics attacks were often undertaken against formidable positions without sufficient preparation by artillery. It is evident that success could only be obtained under such circumstances at a frightful sacrifice of life. However, if the bravery of the troops overcame these difficulties and carried the positions, they could not be maintained owing to the inability to render them tenable by throwing up protective earth-works. Hence it frequently occurred that positions taken at a

tremendous cost were lost again. There were many instances of this kind throughout the month of September, when Skobelev made his various attacks on the green mountains of Plevna, and it is said that the want of entrenching tools to render those positions tenable when taken was so much felt that the troops actually dug up the ground with their bayonets, and by means of their cooking-pots managed to throw up earthworks and protect themselves from the murderous fire of the Turks. The Roumanian army was much better off in this direction, as every second man in it carried the portable spade invented by Linne-man. This practical instrument has since been introduced in the Russian army. We take this opportunity to show below a comparative abstract detailing the relative equipment in the matter of entrenching tools prevailing in the different armies:—

Country.	War strength of Company.	No. of spades per Company.	Proportion of spades to the number of combatants.	No. of axes in the Company.	No. of pickaxes per Company.
Germany ...	250	100	} System Linne-man. } 1/2, 5 } 1/3, 5 } 1/4, 8 } 1/5	10	5
Russia ...	200	80		20	...
Austria ...	198	99		...	...
France ...	250	32		3	12
England ...	100	50 (System Wallace.)		?	?

Continuing in our remarks regarding the Russian army it may be noted that in addition to the personal equipment the company baggage wagon which is allowed to the Russian infantry carries an additional supply of 24 spades, 10 hatchets, 5 shovels, 1 crowbar and 3 pickaxes. It will thus be seen that the former neglect no longer exists, and that, on the other hand, the Russian army must be considered to be liberally supplied in the matter of entrenchment tools. The importance, moreover, which has been paid to the subject shows itself amply in the different regulations which have been issued and which we summarise as follows: As a general rule it is laid down that in defensive positions earthworks are always to be erected whenever it is found that the ground does not offer sufficient cover for protection. In offensive movements the same is ordered to be done in every instance in which the necessity is felt to maintain a position which has been taken and when consequently a counter-attack may be expected to retake the position. The regulations further direct that earthworks should be thrown up in all cases when fortified positions will act as a point of support for further forward movements, or when such a position may be considered to prove itself useful to facilitate retiring movements in cases of failures of attacks. To prevent an abuse in the use of the spade the instructions ordain that in all operations of an offensive nature the permission of the

General Commanding is to be obtained previous to such work being commenced, whilst in those of a defensive nature it is to be considered an understood thing that earthworks are to be erected wherever possible, and permission is only to be obtained if there is ample time to allow of this being done. Once an order is issued to fortify a position it becomes the obligation of the different military commanders to throw up the necessary earthworks within the extent of the ground occupied by their troops, and all responsibility that this is done to the fullest extent rests with them. Commanders are specially enjoined to see that the necessary aid is rendered by infantry fatigue parties to the artillery to enable it to throw up fortified positions for its guns. Great attention is directed to be paid in throwing up earthworks to the fact that this work is to be performed in such a manner that the quickest possible protection is obtained in the shortest possible time, and that the probability of the position being attacked before completion of the works is foreseen. Hence the stronger profiles are to be gradually developed from the weaker ones. We may classify the profiles recognised in the Russian infantry under the following headings:—

Profile No. I. For soldiers lying down.

„ No. II. For soldiers in kneeling position.

„ No. III. For soldiers standing.

„ No. IV. For soldiers standing and enabling them to stand the fire.

To ensure that the parapet offers a sufficient protection against infantry as well as artillery fire it is directed that, in the case of sandy ground, it should not be made weaker than 1·5 feet (·49 metre) and in clay ground 2·5 feet (·82 metre).

At the flanks these works are to be turned back, and these parts, as well as others which are exposed to an enfilading fire, are to be protected by epaulements.

If a company gets the direction to fortify its position, half of it, *viz.*, two sections, are kept intact, and it is the duty of the latter to carry out all protective measures by furnishing a skirmishing line; *i.e.*, to protect the other half company at work. When the men at work are tired out they change position with the former. As a particular illustration of the manner in which attention has been paid to the subject it may not be without interest to mention below the instructions which direct how earthworks are to be thrown up under fire:—

Directly a company receives such an order every man who is not protected in any way by the nature of the ground is directed to lie down, and, lying on his left side, he is told to commence digging up the ground to the extent of from the elbow to the knee and to the distance of about the spade's handle and to the depth of about the width of the spade.

The earth thus obtained is to be deposited close to his head to form, as soon as possible, a protection to it. The digging of the ground of the dimensions above noted having been completed, he is told to place himself in the excavation thus formed, and, lying on his right side, to repeat the work in the same way as before. When finished he hands over the spade to his neighbour, who now in his turn performs the work in the same manner. The men not actually thus employed are told to

avert the enemy's attention by keeping up a continual fire. Earth-works are finally ordered to be carried out in such a manner as to render them as similar as possible to the general features of the ground, and therefore difficult to distinguish.

The distances in front are ascertained by pacing them, and the points so obtained are marked by stones. Any object which can afford shelter to an advancing enemy, such as trees, boulders, &c., are to be removed. Every year each infantry regiment sends a party consisting of officers, non-commissioned officers and soldiers to a corps of sappers with the view of undergoing a regular course of training, and these parties on their return are again made use of in instructing the regiment generally.

We have given above a rough outline of the rules by which the Russian army is guided, and we purpose now to particularise the instructions which obtain on the same subject in the Prussian army.

The Prussian regulations say that cases may often occur when an infantry officer may be called upon to fortify a position without aid or assistance from an engineer officer. It is consequently considered a matter of importance that an infantry officer should possess sufficient knowledge to enable him to carry out works of this description without aid. The following instructions are given for guidance :—

Profiles for the erection of entrenchments are divided as under :—

- (1) For men lying down.
- (2) For men kneeling.
- (3) For men standing.

The entrenchments for men lying down have the advantage that they can be most swiftly thrown up, and afford therefore the quickest protection. The disadvantage, however, connected with them is that they do not afford such sure protection as others would, since a man by lying down offers a considerably larger mark for chance hits from the enemy's fire than one in a standing position. However, on account of the greater facility with which they are erected, they will generally have to be adopted in temporary positions, whilst in entrenchments of a more permanent character profiles for men standing are preferable.

The spade in use with the infantry has a length of .5 metre, divided as follows : .2 metre the length of the blade and .3 metre that of the handle.

The profiles for an entrenchment for men lying down are regulated as follows :—

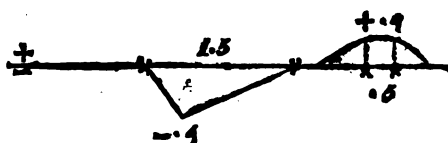
Height of parapet—twice the length of the blade of the spade, equal therefore to .4 metre.

Depth of the ditch ditto ditto ditto ditto.

Width of the ditch, thrice the length of the whole spade, equal to 1.5 metre.

Width of the parapet, equal to the length of the spade— .5 metre.

PROFILE I.



In an entrenchment required for men kneeling down the dimensions are as follows :—

Height of parapet, once the length of the whole spade — $\cdot 5$ metre.

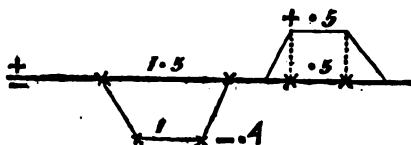
Depth of the ditch, twice the length of the blade of the spade — $\cdot 4$ metre.

Width of the ditch on the top, three times the length of the whole spade — $1\cdot 5$ metre.

Width of the ditch at the bottom, twice the length of the whole spade — 1 metre.

Strength of the parapet, once the length of the whole spade — $\cdot 5$ metre.

PROFILE II.



Entrenchments for men standing are constructed according to the following dimensions :—

Height of parapet, one and half the length of the whole spade — $\cdot 75$ metre.

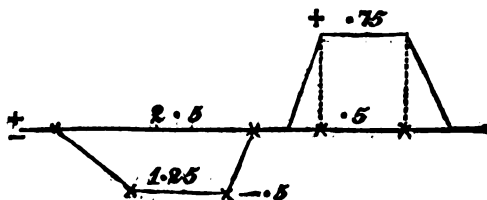
Depth of the ditch, once the length of the whole spade — $\cdot 5$ metre.

Width of the ditch on the top, five times the length of the whole spade — $2\cdot 5$ metre.

Width of the ditch at bottom, two and half times the length of the whole spade — $1\cdot 25$ metre.

Strength of the parapet, once the length of the whole spade — $\cdot 5$ metre.

PROFILE III.



As a rule the stronger profiles will have to be developed gradually from the weaker ones, especially in cases where the entrenchments have to be erected under fire, and where it becomes therefore a factor of importance to obtain protection as quickly as possible.

No normal rules can be laid down for the tracing of the lines on which the entrenchments are to be erected, but the principal point to which attention is to be paid should be to see that they are not exposed to an

enfilading fire from the enemy. If this danger cannot be averted by turning the lines backwards it will be necessary to erect traverses, which is to be effected by leaving the ground at certain intervals undisturbed to the extent of the space of half a metre and by strengthening the wall thus left with the earth obtained from the ditch at its left and right.

The instructions further direct that attention is to be paid to render these entrenchments as similar as possible in appearance to the general features of the surrounding ground, and as freshly thrown-up earth is discernible a long distance off, it is recommended to cover its surface with grass, leaves, &c., according to the description of the ground. The principal point, however, to be observed in the erection of earthworks should be the consideration that they afford the fullest freedom to the use of the rifle. The ground should, therefore, as much as possible, be so selected that the country in front offers little or no protection to the enemy. With regard to the extent of these entrenchments it is to be observed that they are made proportionate to the number fixed for their defence; a front space of .8 metre should, therefore, be allowed per man. For a body of two sections, say 70 men, a front space would, therefore, be required of $.8 \times 70 = 56$ metres.

The following calculations are generally accepted, as the working power of a single man :—

Per hour in sandy ground	...	... 1 c.m.
" in garden ground	..	... .75 c.m.
" in clay ground	...	... .5 c.m.

On this is fixed the calculation for time required for the erection of works. Thus an entrenchment for 70 men according to Profile III would in garden ground be worked out as follows: The profile of the ditch (Profile III) forms a triangle with bases of 1.25 and 2.5 respectively in length and a height of .5 metre; consequently the area of it is $\frac{1.25 + 2.5}{2} \times .5 = .9875$ square metre.

As the entrenchment is intended for a body of 70 men the extent of it is therefore 56 metres, and consequently the cubic space of the whole entrenchment may be taken as $.94 \times 56 = 52.64$, or say, in round numbers, 52.5 c.m. As a man is calculated to dig in garden ground .75 metre an hour, the whole entrenchment will require, if it is to be thrown up in one hour, $52.5 \times .75 = 39.375 = 40$ men.

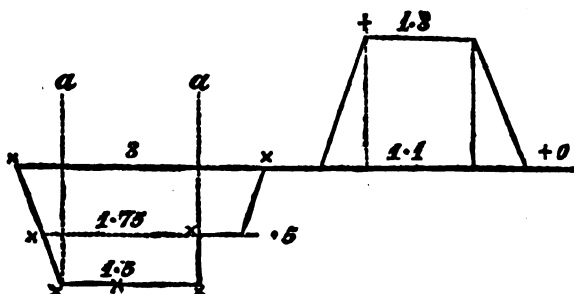
We have seen above that the area in Profile III amounts to .94 square metre. The area in Profile II amounts to .5 square metre and in Profile I to .3 square metre. In light soil a spade should suffice per man, but if the soil is heavy and contains roots or stones a hatchet or pickaxe will become necessary for every second and fourth man, respectively.

To perform the work the fatigue party should be formed up in one line behind the line which should be traced out by the non-commissioned officer, and the men, after having laid down their rifles, should be ordered to move up to the traced out line, and form up here at intervals of a full arm's length from each other and be told to commence work.

In the case of Profile I it appears advisable to trace out the line at that point where the ditch will have its greatest depth, and to arrange for the scarps being gradually cut down afterwards.

In the case of Profiles II and III the line traced out should be the front bank of the ditch, and the men should commence to work at this point. The above profiles should be strengthened considerably in the case of troops kept as supports and where time is not so much of consideration as strength. Profile IV below shows the dimensions which should be usually adopted for these cases, and which offers a better protection as well as a better view, and with it a better command of fire over the country in front. It will be seen that the height of the parapet is fixed at 1.3 metre, the necessary height to enable the men to level their rifles over the parapet.

PROFILE IV.



At an entrenchment of this description two lines of men can be employed at points *a a* until a depth of .5 metre is reached. Thus, for instance, an outlying picket of the strength of 70 men has left at its disposal, after arranging for its double sentries, say 50 men, of which it is intended to use 30 men for the defence of an entrenchment and the balance as a reserve to make up for eventual losses. The entrenchment is ordered to be made in accordance with Profile IV. We have, therefore, the extent of an entrenchment for 30 men = $80 \times .8 \text{ metre} = 24 \text{ metres}$, and to work in reliefs this will give for the first body of men a cubic space of ground to be excavated $\frac{3 + 2.5}{2} \times .5 \times 24 = 83 \text{ cubic metres}$, and will consequently necessitate the employment of 25 men. The relief will have left to it to excavate $\frac{1.75 + 1.5}{2} \times .5 \times 24 = 19.5 \text{ cubic metres}$, and will therefore require about fifteen men, who can only work in one line, and the balance should be made use of in treading down the earth used for the parapet, &c.

We will now consider what deductions we should draw from the above. It must, in the first place, be determined whether we are correct in forming the only exception to the otherwise universal custom of having the entrenching tools carried by the men themselves. This departure can only be accounted for, we presume, in our anxiety to equip our men as lightly as possible and thus afford them ease and comfort. The weight of a spade amounts only to 4lbs. This in itself represents a small figure, but when it is considered that its addition to the other articles of equipment carried in other armies swells

considerably the total personal load of the soldier, it must be admitted that important considerations must have been thrown into the scale to arrive at the decision that the entrenching tools should be carried by, and not for, the men. The experience gained by the Russians in their Turkish campaign has shown us that the absence of entrenching tools was very sorely felt by them, as it contributed to a very large extent to loss of positions gained at considerable sacrifice of life. We believe we are not taking an extreme view of the case when we say that the long time taken by the Russians to capture the fortifications of Plevna was due, in a great measure, to the paucity of entrenching tools and to faulty tactics arising from want of appreciation of their use. There can hardly be any doubt that these shortcomings did not escape the notice of other armies, and that considerably more attention is now paid to the use and importance of entrenching tools than was the case before. Hence the question we have under discussion is practically reduced to the consideration as to whether our present arrangement, by which we expect to ensure their being close at hand at the required moment, is so perfect that we can fully depend upon it, and whether we are in consequence right in not burdening our soldiers with their weight. We are afraid that the experience we possess on this point is altogether confined to the manœuvres which we carry out in peace time in mimic warfare. Here, no doubt, our existing arrangement of getting the tools carried in racks on mules leaves nothing to be desired. The mules can accompany the troops anywhere, and the racks are so arranged that spades and pickaxes can be detached therefrom with the perfect ease and without loss of time. However the question assumes another aspect altogether when we imagine ourselves in actual warfare. It appears to us very improbable that the drivers, being non-enlisted followers, will ever care to follow up the regiment when it dissolves into open order on its arrival into the zone of fire. However, setting aside this consideration, it must be acknowledged that the mules will offer a good target to the enemy, more especially when it is considered that any little object or inequality of ground which will suffice to protect the men will offer no security to the mules. The animal's life under such circumstances will, of necessity, be of short duration, and consequently their death will render the continuance of entrenching tools a matter of impossibility. A little reflection will clearly show that men thus circumstanced will not pay the slightest heed to the loss of these articles, as all their attention will naturally be concentrated in another direction, *viz.*, in the rush on the enemy's position, and their foresight will not go beyond that point. The loss, however, of the tools will be bitterly felt after the position is taken, and, when the time comes for holding it against the enemy to prevent its being retaken, we are afraid that the consequences which may result from entrenching tools being lost in this manner have not had sufficient attention paid to them.

We are, moreover, of opinion that, although, as we have shown above, great stress is laid in modern armies on the matter of entrenching tools, the subject has not, properly speaking, received that consideration

which it really deserves. This we believe has its cause in the fact that all nations are at present bent upon the adoption of offensive tactics. It is a most curious phenomenon that the improvement effected in modern arms has led to this result. It is a problem rather difficult of solution, for, with ordinary reasoning, one would conclude that the result of improvement in arms should naturally tend to exercise a most beneficial influence on defensive tactics. This is, moreover, proved by the fact that their introduction has resulted in the total collapse of former modes of attack and in the adoption of new and difficult formations. The uncertainty which also prevails in this respect is evidenced by each nation having invented and adopted a distinct system of attack formation. It is entirely a problematical matter as to what nation has selected the best. Yet, notwithstanding these difficulties, and the further fact that one arm, *viz.*, cavalry, has nearly been thrown out of consideration by the introduction of modern arms, we see that everywhere defensive tactics are set aside, and that every nation hopes to find its salvation in the adoption of offensive operations. Wherever we look we see that the training imparted, from the highest commander to the lowest private, has for its object offensive tactics, which, it is inculcated in their minds, can alone lead to victory. Pure defensive is looked upon as certain destruction of an army, and for this reason offensive tactics are considered necessary to be combined with the former as an element necessary towards the attainment of success. How these deductions have been arrived at does not at all appear clear to us, and we have our doubts as to whether these principles have not been fixed as axioms without any fundamental basis. It is more than probable that, owing to the excessively large armies employed now-a-days, nations feel that the extraordinary strain which is brought on their resources is so immense that it cannot be maintained for any length of time, and to avoid what is considered an unavoidable collapse they have accepted short and decisive tactics. It seems to us more than dubious that a nation not so situated, and one which will find a long-continued strain more to its advantage, should accept these axioms as applicable without a fuller enquiry, and this is a matter of extreme importance to us. Circumstances place us here (in India), strategically speaking, on the defence, Russia being the attacking party. Should we arrive at the conclusion that it would be advantageous to maintain the defensive more closely than other nations are inclined to do so at present, it is evident that the most prominent attention should be given towards uniting the power of the rifle with the power of the spade. If the views herein set forth are accepted, even to any extent, it is obvious that we must consider the spade and pickaxe to be of more intrinsic value than we have hitherto given them. Hence the consideration we have hitherto shown our men in carrying the tools for them must be put aside, since we cannot afford to depend on their being found ready at hand when required by such haphazard means

as we employ at present. The importance thus attached to them will carry inherently with it the necessity of obtaining greater efficiency in their use, and consequently will give this branch the training it deserves.

SUPPLY OF SMALL ARM AMMUNITION ON THE BATTLE FIELD.

By CAPTAIN J. HAUGHTON, 35th Sikhs.

THE following notes are confined, as far as possible, to the consideration of the supply of ammunition which might be necessary for one day's fighting.

For convenience the subject may be divided into five headings, *viz.* :—

I.—Amount of supply.

II.—The supply carried by the soldier on the march.

III.—The supply carried for the soldier on the march.

IV.—Replenishment during action.

V.—Peace practice.

I.—Amount of Supply.

The number of rounds available on the battle field varies in different armies from 128·7 in the German army to 196 per rifle in the Russian army. The British supply is 180 rounds per rifle.

A further supply is carried by most armies as an army corps reserve, but this would not usually be available during a battle.

To form an opinion whether the present supply is sufficient we must, as far as possible, consider the experiences of recent wars and also any causes which might tend to increase or decrease the expenditure of ammunition in our army.

As regards the former experiences the data are not very satisfactory owing to the improvements which have taken place in firearms since the last great war.

In the Franco-Prussian war the expenditure was as a rule small, but nevertheless in many cases we hear of ammunition running short; on the Prussian side, for instance, at the battle of Spicheren, in the fighting at the Rotherberg and Gifert Forest, after temporarily successful advances, and at the battle of Viouville-Mars la Tours, in the fighting at the Bois de Boulogne and at the Trouville copses also after advances. On the French side we have a notable instance at the battle of Gravelotte, where the failure was less excusable as it occurred on the defensive.

In the Russo-Turkish war the expenditure of ammunition was very great, the Turks firing, on at least one occasion, as many as 150 rounds per rifle and some Russian regiments 143 rounds per rifle; but undoubtedly there was great waste of ammunition on both sides. We may reasonably hope that our own fire discipline is now (though only recently) better than that of the Russians during their last war. Nevertheless there are many considerations which make it probable that our

expenditure may be as great or greater than that of the Russians above mentioned.

Amongst other reasons it must be remembered that our present arm (the Martini-Henry) is superior to any Continental Long range fire. rifle at long ranges, though possibly somewhat inferior at short range. Such being the case we should be throwing away an advantage were we to confine our fire to the ranges at which our enemy would be more on a par with us in this respect. The moral effect of punishing him at a range where his own fire was innocuous would doubtless be great, and might lead to his opening fire at ranges unsuitable to his rifle, as was the case with the Russians when opposed to the Turks.

As far as can be judged our new rifle will maintain its advantage at the longer ranges, whilst being at least equal to any rifle of Continental armies at short range.

Were it a question of how a small amount of ammunition could be best expended it would undoubtedly be best to reserve it for short range, but our resources being great and our army small we can hope, to some extent, to make up for the deficiency of our numbers by the accuracy and amount of our fire, that is, by its useful effect.

Another point in favor of our use of long range fire is that we now have a serviceable infantry range finder; amongst others the invention of Capt. Bate, R.E., may be noted. With this range finder, although the actual distance of moving bodies could not perhaps be ascertained, the distance of various objects in their line of advance could quickly be found and noted. None of the foregoing remarks are intended to recommend the use of long range fire by a fighting line advancing to attack. Such fire should be carried out by special bodies detailed for the purpose.

It appears certain that we shall before long be armed with a magazine rifle. Will such a rifle increase the expenditure of Magazine fire. ammunition?

The Germans who have adopted a magazine rifle appear to have interdicted the use of the repeater except at short ranges. This may be partly due to defects of their magazine apparatus, which has been adopted with a view to suit their existing rifle rather than because it is the best apparatus possible. It may be also partly due to unwillingness to increase the expenditure of ammunition and with it the amount of transport, which with their enormous armies would be a specially serious question. Mayne, in writing of long range fire, says that it is advantageous whenever the objective is suitable to the range. This maxim is still more applicable to the use of the repeater, for the strong point of the magazine rifle is that it allows the fullest advantage to be taken of *fleeting* opportunities. At long range the occasions when the objective would be suitable would usually be fleeting, because the objective, if a body of troops in close formation, would as soon as possible alter its formation by deployment or extension. Another suitable objective would be a battery coming into action, when the most favorable moment would soon pass. Of course the objective would only be

suitable when the range was approximately known, which on the defensive would or should generally be the case. On the other hand it might be said that batteries and columns would not approach to within even long range of hostile infantry. They certainly did do so, and even to medium range, in the Franco-Prussian war, and would do so again if they discovered that the hostile infantry did not fire at such ranges.

The magazine rifle will undoubtedly cause a small increase in expenditure of ammunition in the final stage of attack.

If these deductions are correct we shall have an increase in expenditure on account of the extended use of long range fire and also on account of the introduction of the magazine rifle, but there is a limit placed on this increase by the physical impossibility of firing more than a certain number of rounds with any useful effect.

Taking into consideration the ammunition supply of possible enemies it appears that we should not have a less supply than 200 rounds per rifle available on the battle field. This amount, indeed, may be sometimes exceeded by individual companies or even battalions, but other companies and battalions would expend less and ought to assist with their reserve ammunition.

II.—The Supply carried by the Soldier on the March.

In a recent article by Colonel Luckhardt, C.B., that writer gave it as his opinion that the number of rounds carried on service by the soldier could be considerably increased in India, because the soldier has his kit carried for him. Would not, however, the reasons which make it advisable that a soldier's kit should be carried for him also preclude any considerable increase in the weight of his ammunition on the line of march?

Lieutenant Wilson of the United States army proposed a novel plan for carrying ammunition, which is worthy of experiment, but there appears to be one strong objection to it. Would not the ammunition, unless tightly sewn in, be liable to drop out once the package had been opened for use; and, if secured sufficiently tightly to prevent this, would not the loading be a slow process? If, however, the ammunition for the new rifle be packed in holders containing the number of rounds fed into the magazine at one time there would then be little danger of cartridges being lost, but the holders might be liable to damage.

Undoubtedly, with the ammunition of the future rifle, it will be possible to carry a greater number of rounds, because the ammunition will be lighter owing to the smallness of the bore.

At present the Russian soldier, whilst carrying 14 rounds more than the British (84 against 70), only carries about one ounce more weight of ammunition.

Here we may note that, unless the ammunition of our new rifle is heavier than that of any other European army, a box weighing about a maund should contain about 800 rounds.

The present weight of Martini-Henry ammunition carried by our soldiers is about 7½ lbs.

Taking the weight of our future ammunition as the same as Russian, 90 rounds would weigh 8½ lbs., not much of an increase.

This amount might be carried as follows :—
How carried.

10 rounds in breast pockets (bandoliers) as at present.

40 rounds in ball bag, as can be done at present.

40 rounds in one pouch rather larger than the present pattern.

The present pattern of accoutrements are planned with a special view to carrying the valise. As the valise is not carried in this country it is probable a more suitable equipment might be introduced.

A pouch to carry forty rounds of the new ammunition need not be larger or heavier than the pouch till recently carried by our men. One large pouch empty would probably weigh less than two smaller ones and would do away with the inconvenience of having a pouch on the left side, which greatly incommodes men lying down.

Although it may be inadvisable to increase to any extent the weight carried by the soldier on the march, it will be necessary to increase his supply of ammunition immediately before going into action. For this reason, previously to coming within infantry range of the enemy, a further supply of fifty rounds per man should be served out. It is believed that by the system hereafter proposed this could be done without any serious delay. This further supply when served out might be carried—30 rounds in the havresack and ten rounds in each of two tail pockets. Mayne proposes an extra havresack to be worn at the left side, but any extra accoutrement is a nuisance and an expense ; besides which anything at the left side is apt to interfere with a man lying down. The small amount of ammunition suggested would probably incommode a man less in these tail pockets than in any other position.

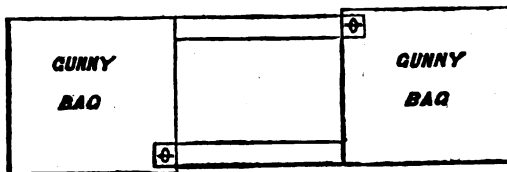
The tight, skimpy, unserviceable garments delighted in by the British soldier would not permit very probably of these tail pockets, but the more serviceable blouse of the Native infantry could easily be provided with them.

III.—The Supply carried for the Soldier on the March.

It is probable that in India it will always be found most convenient that ammunition should be packed, as at present, in boxes weighing, when full, about one maund. With the Martini-Henry such a box contains 600 rounds, but it is probable that with any future rifle the ammunition will be so much lighter that a box containing 800 rounds will weigh about one maund.

The present box has a small sliding door, and to serve out ammunition is a slow process as it must be taken out almost packet by packet. To obviate this disadvantage it is suggested, first, that the boxes should

open with a lid like ordinary boxes ; and, secondly, that the ammunition of each box be ready packed at the arsenal in four bags of canvas or sacking. Each bag to be provided with a broad band of the same material, fastened at one end to the bag and the other end having a loop or button hole, the opposite side of the bag having a button or knob. The object of this arrangement is to enable two bags to be buttoned together to form one double bag, something like the present canvas ammunition bag.



To carry two of these bags the bearer merely puts his head through so that one band rests on each shoulder. To carry one bag the band is looped on to its own button and the band placed over the shoulder or held in the hand. Each bag would contain a quarter of a box or 20lbs. weight.

The double bag, weighing 40lbs., would not be too heavy for a man to carry, say, one mile.

With ammunition packed in this manner the work of distribution would be very much facilitated. On the order to serve out ammunition, the box having been opened, the bearer would take out two bags and carry them to his company, hand one bag to the leader of the first section and proceed at once with the other to the next section. The section commander would at once tear open the bag and hand or throw a packet to each man. Under the arrangements existing at present there would be a considerable delay, first, in taking the ammunition out of the box, then in putting it into the bags. When arrived at the company the bearer would have to remain until the ammunition was served out to one section before he could go on to another, and then the bag must be returned to the ammunition party. Under the proposed system all this would be obviated.

There are two objections, however, which are, first, that the bags would entail a slight extra cost. This cost would be inconsiderable were the bags made of "gunny" and in peace time returned to the arsenal for use over and over again. The second objection is that a box with an ordinary lid could not be opened whilst on the pack as the present boxes can be, but, if a box could be quickly taken off the pack, this would be no disadvantage. To facilitate the loading and unloading of the boxes each pack saddle should have four chains of sufficient length to go round the box, through rings on the box, the chain hooking on to the pack saddle hooks. The present method of cording the boxes entails a considerable amount of labour, and when

done the boxes after all are only hung on the pack saddle hooks as they would be with the proposed chains.

Assuming that the battle supply be fixed at 200 rounds, and that the soldier can carry 90 rounds out of this amount on the march, we have to provide carriage for 110 rounds *on the march*. Assuming, further, that 50 rounds more be served out to him on entering action, we have to provide carriage for only 60 rounds during action.

If mobility were the only point to be considered there is little doubt that the whole of this amount would be best carried on pack animals, but there are many other points to be taken into consideration.

The army of India is liable to such varied conditions of fighting that no one system is applicable to all our little wars. In some cases coolies might be the only possible means of transport; no one would on that account propose that coolie transport should be our only recognised system. Let us consider the case of a war against a European power. In any such war the opposing forces would be large, and the difficulties of supply would probably confine the theatre of war principally to such a country as would also be suitable to field artillery.

Is there any reason why ammunition carts could not be constructed on such a plan that they could travel anywhere that artillery could move?

It may be at once allowed that a certain amount of pack transport would always be necessary, but there are so many arguments against the large use of pack animals that the advantages and disadvantages of that system compared with wheeled transport deserve consideration.

(a) One advantage of pack transport, and it is a very great one, is that it can move almost anywhere that infantry can. For this reason it would always be advisable *in action* to have a certain amount of reserve ammunition on pack animals.

(b) The loss of one animal would *probably* entail a less loss of ammunition than the loss of one cart (see, however, disadvantage g).

(c) Any system of pack transport requires at least double the amount of animals and drivers required for the same weights by wheeled transport. Taking the strength of a battalion as 800 rifles, the ammunition to be carried as 110 rounds per rifle, and the contents of a box as 800 rounds, we should require 55 mules or ponies per battalion (not including spare animals).

With Martini-Henry ammunition, the men carrying only 70 rounds, 87 mules would be required for a total supply of 200 rounds per rifle. For a brigade of four battalions the numbers would be 220 and 348 mules respectively and 74 and 116 drivers; but the actual amount of transport on account of ammunition does not end here, for a further

amount would be necessary to carry the food, spare saddlery, medicines, &c., of these mules and the food and shelter of the drivers (in a rigorous climate shelter *ought* to be provided, though not always done).

(b) The enormous extra labour of loading and unloading pack animals before and after a march. With wheeled transport this is saved as carts remain loaded.

(c) The great addition to the length of the column.

(d) The immense amount of fatigue to the animals owing to their remaining loaded for many hours.

This is a most serious objection. During a march of 15 miles animals would only be actually marching for, at most, 5 hours, but in an enemy's country they would probably remain loaded for double that time, often treble, and even longer. The troops are frequently halted and get a certain amount of relief, but it is no relief to a pack animal to be halted with a heavy load on his back. It is this remaining loaded for hours which kills more transport animals than the actual length of the march. With wheeled transport the animals get a certain amount of relief whenever halted, even though they may not be taken out of the carts, which latter would take but little time and labour compared to unloading and reloading pack animals. With wheeled transport the animals could even get a feed whilst in the cart, which they could not under a pack load.

(e) Pack animals cannot be taken out of a walk without seriously displacing their loads and thereby causing great delay to re-adjust, or, worse still, getting sore backs and becoming useless. Even at the recent camp of exercise this was a serious evil; what then would it be on service?

(f) The difficulty of feeding a large number of animals and drivers, not to mention the extra cost.

(g) With pack animals, if an animal is disabled, his load is absolutely lost unless spare animals are available. With wheeled transport, if one animal is injured, the cart may still be drawn at decreased speed by the remainder, or, if the cart be injured, the load may be distributed on other carts.

(h) In the event of the army being moved by sea the extra transport required by the pack system would require extra shipping.

Assuming the above deductions to be correct we see that, if wheeled transport could move with infantry, it would be far preferable to pack transport.

Any considerable force is hardly likely to move in a country impassable to wheeled artillery. Even in the march from Kandahar to Cabul, under Sir Donald Stewart, the force contained wheeled artillery, which does not appear to have met with any insuperable obstacles.

It must also be remembered that the main body of infantry would usually keep to some sort of road when not actually in action.

If then we could get ammunition carts as mobile as wheeled artillery it would be able to accompany the infantry under most circumstances,

and would be advantageous provided we could arrange for the pack transport of a certain amount of ammunition during action. Let us

Ammunition carts. consider whether ammunition carts could move What is required and as required ; and, if so, what is the best form of proposed form. cart.

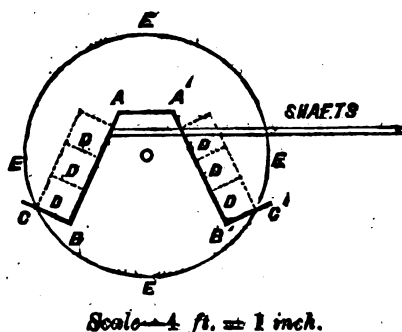
Probably none of the transport carts at present in use in this country could carry ammunition at a sufficient pace, except on a road, amongst other reasons, because they are hardly strong enough to bear the strain caused by rough ground (I do not speak of bullock carts, which would be too slow). The lighter description are only capable of being drawn by one animal ; the horse wagons in use at home and in other countries would require to be as well horsed as artillery if intended to go over the same ground, because the load is too great for a light cart. Lastly, not leastly, in most carts there is no means of fastening down individual boxes ; in those carts where this is arranged for the carts are useless for almost any other kind of load.

It is hoped that in the following suggestions it is shown that a cart without these objections could be constructed.

The present proportion of drivers in our service is one to every three mules. On the one hand we have so high an authority as Colonel Luckhardt suggesting that it might be advisable to have a larger proportion of drivers ; on the other hand we are told that in America one driver can manage six mules by the use of hard swearing. In this country either the mules are more used to it or strange oaths in Hindustani are less effective than those delivered in the American tongue. Any way a native driver could hardly manage more than three animals. It must be allowed that there are good grounds for objecting to any increase that can be avoided in the great army of non-combatants. On the whole the present proportion of three animals per driver is probably the best for our needs.

Taking then a team of three mules or ponies per cart as our standard they may be driven either unicorn fashion—two beasts with a pole as wheelers and one leader—or they might be driven three abreast, the centre one in shafts. The pole system has much to be said in its favor ; manifestly the animals thus harnessed would feel the motion of the cart over bad ground less than an animal in shafts. Although pole draft has been rejected by the Royal Artillery it has been maintained by that of some other nations, but in a cart it would have the objection that the empty cart could not be drawn by one animal as would be the case in the other system. On the whole, perhaps, shafts with a pony outrigger on either side would be the better plan. It is thought that a cart on the following plan would best combine the necessary qualities of strength, lightness, compactness, the means of fastening each individual box of ammunition, and the capability of being used for other loads, such as entrenching tools, tents, soldiers' kits, commissariat bags and barrels, &c., &c.

Tents would require to have the poles jointed, as is almost universally the case at present.



A A' foot.

A B 36 inches.

B C 18 inches.

E E E wheel 5 feet diameter.

D D ammunition boxes (breadth of cart—two boxes).

Breadth of cart 44 inches, to take two boxes lengthways.

These measurements are given as likely to suit for twelve ordinary ammunition boxes. All details are omitted in the sketch for the sake of showing the intended shape more clearly. A C should be joined by a rail; also there should be supports between A B and A' B'.

The space between A B and A' B' could be utilised for carrying one day's ration for the mules. Every cart should be provided with one pick, one shovel and one axe. Numerous iron rings should be fixed on the back board (A B), (foot board) (B C); also on A A'.

The cart is intended to carry twelve ordinary ammunition boxes, but would be capable of carrying at least sixteen—six in front, six behind and four on top A A'; but only twelve boxes is suggested for the ordinary load to enable the cart to travel over the roughest ground.

As each cart carries a spade, pick and axe, nullahs could be quickly ramped by the escort.

The lightest load (12 boxes) is double the amount which can be carried on pack; by the same number of animals therefore each cart would be a saving of three mules and one driver.

Whether calculations are based on boxes of Martini-Henry ammunition containing 600 rounds, or the supposed new ammunition containing 800 rounds, the proportions between what can be carried by pack and by cart will remain the same.

For simplicity's sake let us take a battalion 800 rifles strong and boxes containing 800 rounds, and the amount of ammunition be carried 110 rounds per rifle; this would give us 110 boxes to be carried. On the march this might be done as follows:—

Per battalion	eight (8) pack mules	= 16 boxes,	1st reserve.
"	four (4) carts	= 48	" 2nd reserve.
"	four (4) carts	= 48	" 3rd reserve.

Or two boxes in excess of absolute requirements. By this system 32 mules and 11 drivers would be required. If the whole were carried by pack animals at least 55 mules and 19 drivers would be necessary.

If it is considered absolutely necessary to have a larger amount of ammunition on pack *during the march* we might carry the first and second reserves on pack and third reserve in carts; this would require a total of 44 mules as follows:—

1 boxes, 1st reserve = 8 mules (pack).

4 boxes, 2nd reserve = 24 mules (pack).

4 boxes, 3rd reserve = 12 mules (in 4 carts).

With the whole of the ammunition on pack the ammunition train would be too long for the whole of it to accompany its own battalion on the march, but with only 8 pack mules and 8 carts this would be possible and advisable. I cannot help thinking that, if possible, it is much better to have the whole of the ammunition (for one day) in battalion charge rather than split up into brigade or divisional reserves.

Supposing that on the march the whole of the ammunition accompanies the battalion at once, when the force is ordered to deploy, 50 rounds per rifle should be served out from the carts, leaving the pack ammunition intact. This would absorb the whole of the first four carts, which being now empty could be drawn by one mule, thus setting free 8 mules (2 per cart), or if the carts were parked 12 mules (3 per cart). All mules should be provided with pack saddles so as to be available for draft or pack.

We are, after this distribution of ammunition, left with 48 full boxes and 24 mules; we may then either park the whole of the carts and transfer the whole of the ammunition to packs or, if the carts cannot be parked, we can take 8 mules from the four empty carts and load them with 16 boxes of ammunition from the carts. This, with the 8 mules already loaded, gives us two mules per company to go with the battalion and a further reserve of 32 boxes of ammunition in carts.

By either of these plans we should have a considerable supply of ammunition on pack animals with the troops in action.

To recapitulate:—

The whole on packs would require 55 mules, 19 drivers.

The suggested system ... 32 mules, 11 drivers.

The modified plan ... 44 mules, 15 drivers.

With the present Martini-Henry ammunition the proportions would be the same but the amounts greater, not only on account of the greater weight, but because less would be carried by the soldier.

IV.—*Replenishment during Action.*

As already suggested troops before entering action should be served

Ammunition served out with an increased supply of ammunition. out before entering action. This is a point of vital importance, for it is more than doubtful whether any attack could possibly be successful in which troops ran short of ammunition during

the actual advance. This point is insisted on in the regulations of most Continental armies.

Let us now consider under what circumstances it would be possible

When is it possible to replenish the ammunition of the fighting line. Taking the Franco-Prussian war as the best example of modern warfare we see that a battle consists of a number of local attacks, which, though all part of one general plan, have each their own well-defined objective.

In fact the advance, instead of being one great wave, is made up of a number of little waves, of which some establish their advance in one place, whilst others are rolled back. Frequently an attack is successful locally, but the victorious troops are in their turn forced to retire owing, sometimes, to an insufficiency of ammunition to meet the counter-attack. Thus at the battle of Spicheren the 1st Battalion 39th Regiment, after a victorious advance through the Gifert Forest, found its ammunition failing, and, with "neither support at hand nor the wherewithal to replenish their pouches," were obliged to retire before the vigorous counter-stroke of the enemy. At the same battle, after the capture by the Prussians of the Rotherberg, the position was very nearly lost owing to the failure of ammunition.

In the battle of Viouville we find the Prussian infantry, having forced their way through the Bois de Boulogne, unable to advance further, having almost expended their ammunition. At the same battle we find the infantry obliged to retire through the Trouville copses, having expended their ammunition. It is needless to repeat examples; suffice it to say that most of these battles consisted to a great extent, as far as the infantry were concerned, of local advances and retirements, where one side would seize some well-defined point, such as a wood, copse, hamlet, mill, &c., often to be driven out and again to attack the same point. After such an attack there is generally a slight pause before counter-attack. This opportunity should be seized to reorganise the thoroughly mixed units and to replenish the ammunition.

Any such defined point, whether copse, ridge or other object, will, when once seized, give a certain amount of cover for the advance of the ammunition party. In like manner, if the assault fail, the late assailants will go on retiring until they get some defined object to rally in or behind.

If these deductions be correct the most favorable and necessary moment for replenishing will be immediately after a successful attack (it must be immediately) or as soon as the troops rally after an unsuccessful one.

After an attack the assailants, whether successful or not, will have

The manner of replenishment. plenty to do without sending back for ammunition; besides which the time required for a party to go back, even 400 yards, and bring up ammunition, will probably not be available; there are also other objections to sending any one back from the fighting line.

There should, therefore, be some responsible and intelligent person with the ammunition, who, during the advance, will see that the mules follow the attack as closely as the configuration of the ground will permit. It will seldom happen that cover will be so totally absent that a few mules cannot follow at a distance of, say, 600 yards by picking their way from point to point. As long as mules can follow they should do so; if that becomes impossible as much ammunition must be carried by men as they can carry. It must be remembered that, during the assault, the enemy's attention and fire will be pretty well occupied by the fighting line.

Whilst the result of the assault remains doubtful the ammunition party must remain under cover, though as near as possible to the fighting line. Immediately the assault appears successful the ammunition must be pushed on (without waiting for orders) by the quickest route possible. On arriving at the fighting line the bags are taken to the section leaders, who open them and throw the packets to the men of their sections.

In the event of the assault being unsuccessful the ammunition party must rapidly make for that defined point on which the troops are likely to rally, and must open the boxes and have the bags ready to serve out at once.

The main principles for the ammunition party to act on are :—

1st.—That, whenever opportunity occurs, the ammunition of the soldier must be replenished to the full amount he can carry, *i.e.*, to 140 rounds (if available), although the soldier may only have expended a few rounds.

2nd.—That it is the duty of the ammunition party to find out when replenishment is possible and necessary and not to wait till called upon.

3rd.—That the ammunition party should always keep as near the fighting line as there is cover for them.

The proposed plan of having the ammunition ready packed in bags has the following advantages :—

(a) No delay in transferring ammunition from box to bag.

(b) There is no sending back the empty bags (for the disadvantages of sending men back from the fighting line *vide* Mayne's Fire Tactics).

(c) No inconvenience owing to lost bags.

The plan of using regimental pioneers as ammunition bearers has some objections.

Their services might be more useful in the advance to help to clear obstacles. Battles consist very largely in the seizure of successive points, such as build ings, which, when seized, should be rapidly rendered defensible towards the enemy's side; for this the skilled labour of the pioneers would be more valuable than as mere carriers.

The ammunition party should have a special commander and one or two specially selected non-commissioned officers. The remainder of the party would require no great training.

It would be advantageous to have this party pretty strong at first ; they would act as a guard and would help the movement of the carts by using the spade, pick and axe with which each cart is provided.

As ammunition was replenished they would reinforce the fighting line, joining whatever company they might have taken ammunition to.

On the whole it might not be advisable to take men from each company, because they would get to consider that the ammunition in their charge was the special property of their own company, whereas all ammunition should be available for any company that might require it.

V.—Peace Practice.

To enable the replenishment of ammunition to be practised in peace time the blank cartridges should be done up in packets and the packets in bags as proposed for ball cartridge, though perhaps packets of five cartridges would do instead of packets of ten.

The management of the ammunition mules and bearers requires as much or more attention than the actual serving out of the cartridges.

Ammunition should always be served out just before "forming for attack," and also always after a successful attack or after a retirement, whether it is the intention to carry the exercise further or not. This would habituate the men to rally on these occasions.

It is most desirable that transport of the kind which would be used on service should be available for this practice. If ammunition transport could always be in possession of a regiment the effect would be most valuable. Colonel Luckhardt alludes to the bad state to which the pack animals issued to regiments at the last camp of exercise were quickly reduced ; and he appears to consider that it was due to want of appreciation of the value of transport. The 24th P. I., who had been long in possession of regimental transport, marched down from Mian Mir with a large number of pack animals. These animals were in such good condition that they were selected to supply the wants of the head-quarter staff and of others for whom the pick of the transport was considered desirable. Does not this tend to prove that, in the converse case, want of knowledge was to blame ?

The present transport classes are a step in the right direction, but knowledge quickly acquired is generally quickly forgotten. If regiments were habitually in possession of a small amount of transport they would take a pride and interest in its welfare, and transport duties would soon be looked upon as a branch of military art. If the transport consisted of ponies instead of mules it might be available for the training of a certain number of men annually as mounted infantry. The regimental transport might be available on indent of the commissariat officer for station duty at large stations, each regiment being detailed in turn for this duty. In this way the increase in the peace establishment of transport need not be very large.

The saving in war time owing to the better care of the transport would, I believe, amply repay the increased peace expenditure, and the improvement in efficiency would be incalculable.

SOME FURTHER REMARKS ON THE SUPPLY OF AMMUNITION TO GUNS IN ACTION.

By MAJOR JAMES FOX-BROUGH, K.B., R.H.A.

SINCE I wrote my former remarks on the supply of ammunition to batteries in action "Letters on Artillery," by Prince Kraft Zu Hohenlohe Ingelfingen, have been translated by Major N. L. Walford, R.A., and published in the proceedings of the Royal Artillery Institution. In the May number the ninth letter has appeared, dealing with renewal of ammunition in time of war.

From it I make the following extracts :—

"On the march batteries never moved in any other formation than that prescribed for rapid marches. A wagon followed every gun, and was under the command of the No. 1. At the rear of the battery marched the store wagon, the field forge, and the baggage wagons (all the wagons connected with the internal economy of the battery), under the command of the quarter-master sergeant. When the battery was about to advance into its position for action the command was given : 'Form lines of wagons.' The guns pushed on as soon as they came within reach of the enemy's fire. The first line of wagons followed close behind them ; this included three ammunition and one store wagon. The second line, that is the six other wagons, were collected from the whole brigade, placed under command of an officer, and posted at some point selected by the officer commanding the brigade. When the battery unlimbered the wagons of the first line took up a position on the left of the guns, on the same front and with the same interval."

From this it might be understood that these three ammunition wagons of the first line remained in action on the left of their guns ; but that such was not the case is shown by the following :—

"So long as the permissible slowness of the fire rendered it possible to do so every shell was to be taken direct from the wagon, *with which object a wagon was posted in rear of No. 2 and another in rear of No. 5 gun.*"

The italics are mine ; and it will be noticed that this position for two of them is precisely what I ventured to suggest it should be in my former remarks on the subject. It certainly seems strange to post these two wagons first on the left of the guns and then, when the guns have been observed and attracted the enemy's fire, to move them along the rear of the battery to the positions assigned them in action. To let them advance in rear of Nos. 2 and 5, and remain there, would seem to be both the simplest and safest plan.

But to proceed : "As soon as a wagon was empty the wounded and also the dead were placed on it (for it is not wise to leave them long in

sight of the battery), and it was allowed to return slowly to the collected second lines of the brigade. The *third wagon of the first line took its place*, and one from the second line was brought up as quickly as possible to the flank of the battery."

Now, as a means towards the renewal of the ammunition or rather to the *perfect* continuance of its supply, the presence of this third wagon on the left flank would appear to be either too little for this object or too much.

One wagon in rear of No. 2 supplies the right half battery with ammunition and one in rear of No. 5, the left.

Presuming that, as the Germans lay down should be done, the fire of all the six guns is continuous and regular the ammunition in these two wagons should be finished within a very short time, the one of the other. Therefore I say too little, because the third wagon cannot then take the place of the two emptied by the fire of the six guns, and I say too much because, if a fresh wagon can be brought up from the second line in place of the second which becomes empty, then surely it would be equally simple for both the fresh wagons to be brought up from that line.

The *Prince* says that the wagon on the left is not exposed to artillery fire and that the German artillery hardly suffered from any wagons being blown up. But surely a wagon placed on the left of the guns must suffer from infantry fire and bullets from shells, which would disable men and horses though not the wagon itself. In fact it is to my mind difficult to discover the advantage of placing the third wagon on the left of the guns, where, as the *Prince* says, it certainly takes up room, which moreover, as at Sedan, could not be provided for it. What is the object of having it, its men and horses, under fire till its ammunition is required for use?

Also as regards every gun being followed by its wagon on the march, and then, when the battery is about to advance into its position in action, eliminating those of the second line, this must, as I said in my former remarks, cause some confusion at a critical moment. Ably as was the German artillery handled in the war of 1870-71, there must have been times when a battery, arriving with each gun followed by a wagon on the field, found itself under fire, and under such circumstances eliminating a team which may have received a casualty must divert attention from the important matters of a prompt advance into position.

Moreover the second line of wagons when eliminated from their guns must for some minutes at least be in the way of the guns of the next succeeding battery.

Thirdly, as the second lines of wagons are not required with their guns for a continuous supply of ammunition at the outset of an engagement, why not, instead of brigading them after arriving on the field and when most likely they will be under fire, let them be brigaded on the march? They could then follow in rear of the rear battery.

Two extracts, which I shall quote here, would seem to account for Prince Hohenlohe's nervousness about separating wagons from their batteries. They are:—

"Thus an unfortunate *N.-C. officer* in charge of a line of wagons may find himself with his three or four wagons treated by a cavalry or infantry regiment, *if he gets in the way*, as so much train which has no business there, and will thus be hustled into the ditch."

And again: "The commander of the lines of wagons, a *N.-C. officer*, or even sometimes an *old soldier*. * * *"

Both being apparently relative to his experiences in the war of 1866; and small wonder that an objection arose to a system which placed lines of wagons in charge of a *N.-C. officer*, much less of "an old soldier."

When wagons are detached from their guns in the British service the rule is that the captain of the battery is to be placed in charge of them. Such an officer would neither be likely to get them "in the way" of other troops or allow his charge to be hustled into a ditch. But what is a far more important argument is this: I do not believe that there is a single commanding officer of a British cavalry, or infantry, or *Native cavalry*, or infantry, regiment who would desire to do such a thing as hustle ammunition wagons following batteries to the scene of action off the road. There is no officer of standing and position in our army who does not know how necessary artillery fire is at the outset of a battle and that without ammunition the artillery cannot pretend to pave the way for the advance of his particular regiment, whether it be horse or foot.

When we read dissertations on what German artillery authorities now profess we must not lose sight of one well-known fact, which is that, during the Franco-German war of 1870-71, the German artillery—splendid service though it now is and as it then proved itself to be—had a reputation to make. It made it, but that is no argument why we should accept its every "fad" as sound and past questioning.

To my mind placing the third wagon on the left of its guns, or bringing it up at all into the fighting line till its ammunition is wanted, is a "fad," and also to my limited vision the attaching of a wagon on the march to each gun is another "fad."

One of the points which the German artillery do lay stress on is the necessity of columns of artillery advancing as quickly as possible to the scene of action. Now the shorter a column of guns, with their *absolutely necessary* wagons, is from front to rear, the less time will such an advance along any road take. Every wagon added which is not required at the opening of the action is a wagon in the way of such a rapid advance, and it is, moreover, an additional possibility of an accident either on the march or on reaching the battle field interfering with the guns in rear of it.

Anent the matter of rapidity of marching there are a few remarks to end with. I shall put them in the shape of questions and answers. These questions and answers refer, I may state, to a battery of horse artillery armed with the 9-pr. R. M. L. guns as in India at present.

1.—Q. What is the weight of the shafts of a gun limber in marching order before the two limber gunners mount?

A. Ninety-four pounds.

2.—Q. What is the weight *after* they mount ?

A. One hundred and eight pounds.

3.—Q. Supposing that, instead of the two limber gunners mounting on the limber, they sit back to back on the *trail*, what is the weight of the shafts then ?

A. Seventy-five pounds.

4.—Q. Lastly, if the two limber gunners sit on the axle-tree boxes, what is then the weight of the shafts ?

A. Ninety-four pounds, the same as answer to Q. 1.

Remarks :—

We have no seats on the trail, and the position indicated in Q. 2 is that recognised. Now it will be observed that, if we had seats on the trail, the weight on the shaft horse's back would be *decreased* by 19 pounds by the two men seating themselves on them, that being the difference between 94 pounds and 75 pounds.

We have axle-tree seats ; but it will be seen that placing the two men on them does not affect the weight of the shafts.

5.—Q. What is the weight of the shafts of a wagon in marching order *before* the two gunners mount on the limber ?

A. Eighty-six pounds.

6.—Q. And *after* they have mounted ?

A. One hundred pounds.

7.—Q. Supposing the two gunners to sit back to back on the *perch* instead of on the limber, what would the weight of the shafts be then ?

A. Sixty pounds.

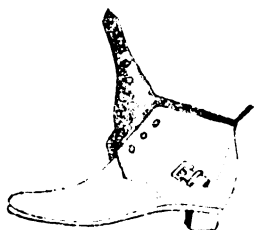
Remarks :—

We have no seats on the perch. If we had, by seating the two men on them, the weight of the shafts would be *reduced* by 26 pounds, or the difference between 86 pounds and 60 pounds.

The Germans are apparently introducing seats on the trail. Let us do the same, and in addition provide similar seats on the perch of each wagon ; and, instead of carrying men on the limbers *on the march*, let them be carried on such seats. As soon as a battery deploys on the battle field then let these men take their seats on the limber boxes, as that position is the safer in case of a carriage upsetting.

But the lessening of the weight of the shafts on the march by from 20 to 25 pounds would prove a great saving to the shaft horses of both gun and wagon.

SPECIMENS OF BOOTS AT PRESENT WORN IN THE NATIVE ARMY



BOOTS FOR THE NATIVE ARMY.

By G. B. A.

CAVALRY BOOTS.

GENERALLY speaking the knee boot at present worn by the Bengal Cavalry is of the Napoleon pattern, while the cavalry of the Madras and Bombay Presidencies prefer the lower cut "Hessian" or "Butcher" boot. But, whatever the pattern, there is always great difficulty in getting a native cavalryman's knee boot to fit well. Almost invariably the dimensions of the calf of a native of this country are smaller than those of the instep measured round the heel; in consequence a knee boot made to fit him round the calf will be too narrow to allow of his getting his foot with its protruding heel into the boot at all. And here it may be as well to state at once that, on *active service*, knee boots are not required at all by native cavalry; as far as can be ascertained, ankle boots with putties have always been found to answer much better. It is then with knee boots for parade purposes that we are chiefly concerned; and what I propose doing is to review as shortly as possible a few of the patterns at present in use, on that have been tried, pointing out what appear to be their advantages and their defects.

The *Napoleon* pattern is preferred by many regiments as being of the simplest construction; but it exemplifies perhaps more than any other boot the difficulty there is in fitting a native cavalryman well. The legs of the boot are always much too large for the calf of the wearer; and, as a consequence, after having been in wear some time, almost invariably begin to sink down the leg, presenting an ugly, bulgy appearance. Again, if the legs are made of stiff solid leather, so as to prevent their sinking in the manner described, there is a danger of their being rendered too heavy and clumsy. Napoleon boots are most unsuited to dismounted duty, and are very difficult to get on and off.

The *Combination Gaiter* or *Tipping* boot has found favor with some regiments. It is, as its name implies, a stiff gaiter strapped to an ankle boot (Figures I & II) in such a way as to have the appearance of a knee boot. Briefly described, the advantages claimed for it are the following:—

- (1). It can be made to fit a native well.
- (2). It is suited for both mounted and dismounted duty.
- (3). Being in two parts, it is not subject to the disadvantages of an ordinary knee boot.

Undeniably it is a smart-looking boot, but the disadvantages urged against it are—

(1). That it is not simple enough in construction.

(2). That it takes a long time to put on.

The latter objection particularly is considered by many to condemn the boot.

The *Modified Elcho* pattern (Figure III) is very like the ordinary Elcho shooting boot, except that, instead of being laced nearly all the way up, it is only laced a third of the way up, the upper part being buckled instead of laced. This modification is intended, of course, to simplify and shorten the process of putting on the boot, for, as is well known, the native soldier is a very bad hand at lacing. The advantages claimed for the boot are—

(1). It is suited for both mounted and dismounted duty.

(2). Although not stiff, like an ordinary knee boot, it is perfectly water-tight.

(3). It is more suited to a native soldier than the ordinary Elcho boot.

But, on the other hand, several objections are urged against it :—

(1). The leather being soft is sure to crease and sink in wear and spoil the appearance of the boot.

(2). The lacing is liable to come undone, and possibly, by catching in the stirrup, impede the wearer when in the saddle.

(3). The buckles of the upper part are likely to get knocked off by friction in the ranks, and when once they give way there is no means of securing the flap.

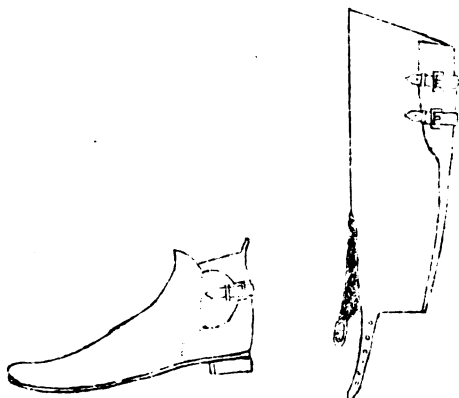
(4). The elaborate water-tight tongue arrangement is not desirable in a sewer's boot, simplicity of construction being most necessary.

There can, in my opinion, be no doubt that this pattern is not suitable for native cavalry.

We now come to the *Hessian* or *British Cavalry* knee boot. This pattern (formerly "square-cut" instead of "V-cut") was the regulation British cavalry boot for a long time, and while perfectly light and serviceable in other respects, had, in common with ordinary riding boots, the one defect of being difficult to get on and off when damp. This defect the Pimlico authorities have quite recently remedied by the insertion of a gusset, about three inches long, in the instep or "throat" of the boot, which eases the tightness of the boot in the very part that caused the difficulty of getting it on and off. This gusset is rendered water-tight by a simple calf-skin tongue fastened on the inside, and when the boot has been put on, is laced up by five eyelets inserted on each side, the whole being afterwards covered and hid from view by a broad spur-strap. This improved pattern (Figure IX) knee boot no doubt meets the requirements of British cavalry perfectly; and, in my opinion, it is also the best for native cavalry. I will give briefly my reasons for thinking it on the whole better suited to the requirements of native cavalry than any other pattern :—

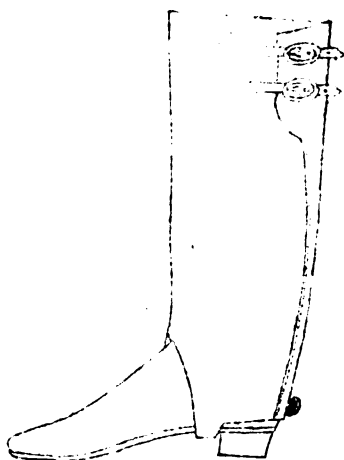
(1). It is perfectly simple in construction.

FIG. I.



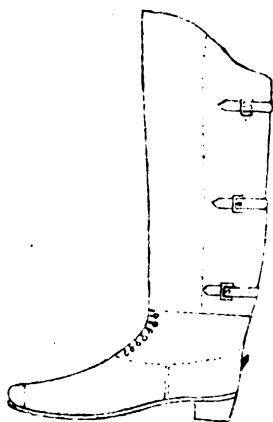
The Tipping Boot and Gaiter-
detached.

FIG. II.



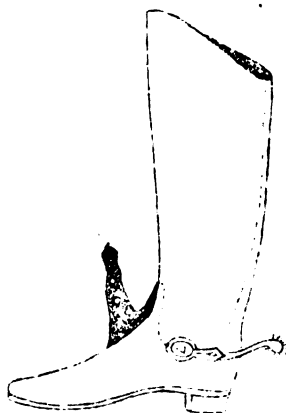
The Tipping Boot and Gaiter-
as worn

FIG. III.



The modified Elcho Boot.

FIG. IV.



The Nicolson Boot.

SPECIMENS OF SHOES WORN IN THE NATIVE ARMY.

NATIVE PATTERNS.



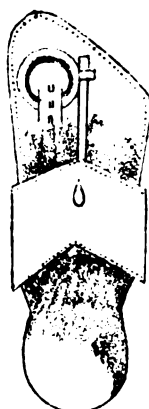
Punjabi



Goorgabi.



Moonda.



Chappal.



Hindustani

EUROPEAN PATTERNS.



Mohiere



Highland.



Oxford.



Buckle.

- (2). It is lighter and more serviceable than the long heavy Napoleon boot.
- (3). The opening of the gusset to a certain extent enables the leg of the boot to be made so as to fit more closely round the calf.
- (4). The misfits which the protruding heel of the native soldier often render inevitable are not so glaringly noticeable as in the case of a Napoleon boot.
- (5). The boot from its very shape is always fairly smart-looking.
- (6). The gusset allows a certain amount of play to the ankle when the wearer of the boot is dismounted.
- (7). The boots are got on and off without difficulty.

In this connection it may be as well to mention the *Nicolson* boot (Figure IV), which is on exactly the same principle as the British cavalry pattern, except that the opening at the instep or "throat" is closed by a flap or buckle instead of a laced gusset. In my opinion, the gusset is infinitely preferable, because the flap of the *Nicolson* boot does not lie smoothly, and is rather inclined to bulge, while the buckle (which is much larger than a spur-strap buckle) is in a minor degree open to the same objection that was urged against the buckles on the upper part of the Modified Elcho boot. At the same time it must be admitted that the idea of one strap and buckle serving for both the opening at the "throat" and the attachment of the spur is a very ingenious one.

The idea that mainly strikes one in considering the numerous ingenious patterns (of which I have noticed only a few) that have been devised to meet the peculiar requirements of Native cavalry, is that the defects that can be urged against boots of complicated construction always more than counterbalance the advantages to secure which they were invented, and the conclusion seems to be that it is best to adopt that pattern against which the fewest objections can be urged.

ANKLE BOOTS.

It was observed at the Delhi "march-past" last year that the sepoy wearing native shoes experienced some difficulty in marching through mud that was six inches deep. Thereupon a howl was raised about the unsuitableness of the native shoe as a part of the native foot-soldier's equipment. But to condemn the ordinary native shoe is a great mistake. For marching on dry level ground no form of shoe or boot is as good; and native regiments equipped with the native shoe will, in the plains of India, cover ground in shorter time than any troops in the world. On the other hand, for swampy or rocky ground, the ankle boot is equally indispensable. The sepoy, therefore, if he is to be equipped so as to march with facility over any kind of ground, must have both boot and shoe. The most natural solution of the difficulty would be to devise a kind of shoe that would combine the advantages of both. But the two things are so different that this is, in my opinion, quite impossible. The light native shoe with its flat heel and curved bottom is peculiarly adapted to the comparatively shuffling step of the

native, who does not lift his foot in marching nearly as much as a European. It will no doubt often have been observed that a native, when he marches in boots (which are *flat-bottomed*), on level ground, always wears them out first at the toe of the sole ; from this the virtue of the curved sole of the native shoe will at once be appreciated (Figure V). But, as Colonel Babington has rightly pointed out in his pamphlet entitled *A Boot and a Shoe for the Native Army*, the defects of the ordinary native shoe are—

- (1). That it affords no protection from thorns, &c., to the upper part of the foot.
- (2). That it allows small stones and sand to work in from above and hurt the foot.
- (3). That it cannot be kept on the foot when marching over heavy or swampy ground.

There is a kind of native shoe (Figure VII) sometimes worn by villagers in low-lying and swampy districts, which is designed to obviate all these disadvantages. But the broad flap by which this is effected is very ugly, and the shoe would never be adopted for military purposes. Nor, it must be confessed, does the combined boot and shoe (Figure VI) which Colonel Babington has devised, altogether meet the case. It is not so much that the invention is not all it claims to be as that it labours under the disadvantage of being "neither one thing nor the other." The attachment of the upper and the change* of the shape of the heel and bottom take away many of the advantages of the native shoe ; while we are given instead an ugly boot, not well constructed, and being moreover neither as strong nor as durable as an ordinary Army boot. Colonel Babington has shown a clear appreciation of the difficulties of the case, and has made an honest endeavour to meet them ; but he has, I fear, attempted an impossible task.

If, then, the sepoy is to have both boots and shoes, the great thing to arrive at is the adoption of the most suitable kinds. Let the style of the native shoe be that to which each regiment is accustomed, whether Punjabi, Hindustani, Goorgabi, Moonda, or any other pattern. The "Punjabi" appears to be the most generally worn at present, and it is that pattern alone, I believe, that the Commissariat Department issues for the use of camp-followers all over India. But whether it might be universally adopted is another matter, and I do not think that regiments that are composed of men who do not like the pattern should be forced to wear it. At any rate the colour and make of the Punjabi shoe might with advantage be made uniform in all regiments, as it would facilitate the transfer of excess stocks of shoes from one regiment to another. The best and most serviceable colour is the ordinary buff with red edging, such as is supplied to camp-followers. For the rest, the present shapes and styles of make of the different patterns are perfectly suitable, and all that is necessary is to see that the shoes are made strongly and well. Do not cut down the contractor who supplies

* I am referring to Colonel Babington's latest and improved pattern.

FIG.V.



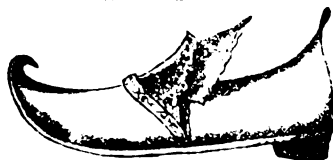
Sketch illustrating the difference between the soles of a Native Shoe and a European Boot.

FIG. VI.



The Babington Shoe.

FIG. VII



The "Flapped" Native Shoe

FIG. VIII.

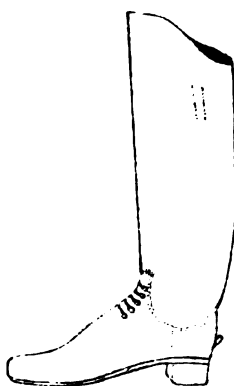


The British Army Lace-up, Ankle Boot.



Same pattern as above, with hooks for the Native Army.

FIG. IX.



The British Army regulation Knee Boot, proposed as the Regulation pattern for the Native Army.

FIG. X.



The shape of the Native Foot.



The shape of the European Foot, as distorted by wearing Boots with pointed toes.

them too low in price, or he is sure to make them of rubbish that will not last.

Great care should, however, be taken to see that *comfortable* ankle boots are supplied to the sepoy. It must be remembered that, while a British soldier has been accustomed to boots from childhood, and regards them as an indispensable covering to his feet, the native soldier—except perhaps the Goorkha, who apparently is very fond of his boots—probably never wore boots at all before he joined his regiment, and however proud he may be of them, regards them much more as a part of his equipment, on which the “Sircar” insists, than as connected with his personal comfort. Broad-toed boots that will not cramp the feet (Figure X), with low broad heels, should always be obtained in spite of the shoemaker, who naturally prefers to supply a narrow-made boot with pointed toes, because it does not take so much leather to make it. The following extract from a letter which was written a short time ago by Colonel Wynch, Commandant of the 22nd Madras Infantry, will illustrate the importance of shape in a sepoy’s boot :—

It affords me much pleasure to inform you that my regiment marched a distance of 433 miles within the last 12 months, and we found that but few men fell out from “shoe-bite.”

I insist upon having my boots cut straight on the inside, with broad toes, as Professor Hermann advocates. The toes of the natural foot are straight with or parallel to the line through the foot’s centre. See the foot of a native of this country, whose feet have never become deformed by having worn the cut away or pointed English boot, while the toes of the majority of Englishmen are drawn to an angle, the result of the boots being cut away in the inside to a point to look, as some people think, pretty.

Socks—when a regiment can afford it—add greatly to the comfort of a sepoy when wearing boots ; they should be made as thick as possible.

Reference was made in the first part of this article to the fact that boots worn by natives generally wear out first in the toe of the sole : this can be remedied by attaching an iron toe-plate to that part of the sole, though of course this makes the boot somewhat heavier. Again, in the hills, the sole can be further protected by the use of hob-nails, which should be carefully and firmly put in ; but large carpenters’ screws are not recommended. The heels should always be protected by iron plates—known as “heel-tips”—and for wear in the hills it will be found better to have these screwed on instead of nailed. The back-strap or tag which Europeans use in pulling on their boots is not used much by natives, and it may be found tidier to dispense with it altogether.

We now come to the question of the most suitable pattern of ankle boot for natives. I do not propose reviewing the different patterns at present in use, because they are so numerous, and many of them so bad, that no advantage would be gained by discussing them. It will be enough to state at once that the ordinary laced ankle boot of the British Army pattern (Figure VIII) is *by far* the best. Its con-

struction is infinitely more suited to marching purposes than any other boot that has ever been invented. Perhaps it will be instructive to mention in this connection that the American and all the Continental armies (except the Italian army, who wear laced shoes* very like our Highland shoe) wear this boot. There is, I am aware, a very general prejudice in the native army in favour of buckled boots; this is not at all unnatural, because buckles and straps are much more easily and rapidly fastened than laces. A native soldier, who has very often to turn out in the early mornings, cannot be expected to pass the ends of his laces through the laceholes without some difficulty when he has to feel for them in the dark. The remedy for this is, however, very simple, and is already finding favour in the native army; it is the substitution of hooks for the three upper lace-holes of the boot, as it is generally only through these three upper holes that the laces have to be passed when putting on or taking off the boot. The only reason why British soldiers do not have hooks to their boots is because it is thought they would rub against and wear out their tight trousers or "overalls." At any time, it must be admitted, there seems to be some difficulty in getting the native soldier to lace his boots *neatly*; but this, surely, is a defect that will disappear as he gets more familiar with lace boots. It has come under my notice that several regiments who used formerly to take buckle boots have since adopted lace boots, which proves that the latter kind is gaining in popularity. Indeed, there can be no question about the comparative merits of the two patterns; the best of buckled boots are vastly inferior to the laced boot in point of construction, and do not give nearly as much support to the foot, added to which they never fit so well round the ankle. Any form of fastening, especially a buckle, is inferior to lacing, simply because it is liable to break and give way, especially on active service, thereby rendering the boot unserviceable. Lacing, on the other hand, is always efficient, because, even if the lace breaks, another can be easily substituted in its place. The sepoy should always have an extra pair of laces with him.

For cavalry regiments I recommend exactly the same kind of ankle boot, cut, if preferred, a little higher, so as to fit well under the puttie. The lacing can be covered by a broad spur-strap, as in the case of the gusset of the knee boot. British cavalry always wear their ordinary lace ankle boots with putties on active service. The buckled boot with blocked front, which some Bengal cavalry regiments wear, is quite unnecessary; it is not a good boot for dismounted work, and does not fit well round the ankle.

SUMMARY.

It will have been gathered from the foregoing remarks that the conclusions to which I have come are that the regulation boots of the native army, both cavalry and infantry, should be of the same pattern

* I do not recommend laced shoes of the Highland or Oxford pattern, because while they are nearly as heavy as boots, they afford no protection or support to the ankle.

as those at present used in the British army. The British army has been accustomed to fighting under all circumstances of soil and climate. And now that the native army is no longer a local force, but goes "across the black water" to Egypt or Burma, it is not unreasonable to conclude that the kind of boot that has been proved to suit the British army best will also be found to be the best for the native army.

The present regulation "kit" of the British Army is as follows :—

<i>British Cavalry</i> —Knee boots	...	...	1 pair.
*Wellington boots	...	...	1 "
Ankle boots, ordinary lace pattern	...	...	1 "
<i>British Infantry</i> —Ankle boots, ordinary lace pattern	...	...	2 pairs.
It is proposed that the native army should have :—			
<i>Native Cavalry</i> —Knee boots, of British army pattern	...	...	1 pair.
Ankle boots, of British army pattern	...	...	1 "
Native shoes, according to custom of regiment	...	...	1 "
<i>Native Infantry</i> —Ankle boots, of British army pattern	...	...	1 "
Native shoes, according to custom of regiment	...	...	1 "

APPENDIX.

GUIDE FOR ORDERING BOOTS.

Scale showing proportion of sizes in 100 pairs usually required by H. M.'s Native Army.

<i>Bengal Infantry.</i>	
5 Size.	2 Pairs.
6 "	12 "
7 "	24 "
8 "	29 "
9 "	20 "
10 "	10 "
11 "	8 "

100 Pairs.

<i>Bengal Cavalry.</i>	
6 Size.	8 Pairs.
7 "	22 "
8 "	30 "
9 "	23 "
10 "	12 "
11 "	4 "
12 "	1 "

100 Pairs.

<i>Goorkhas.</i>	
4 Size.	2 Pairs.
5 "	16 "
6 "	40 "
7 "	30 "
8 "	10 "
9 "	2 "
10 "	0 "

100 Pairs.

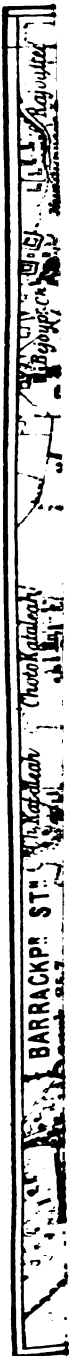
<i>Madras Army.</i>	
5 Size.	2 Pairs.
6 "	10 "
7 "	26 "
8 "	34 "
9 "	19 "
10 "	8 "
11 "	1 "

100 Pairs.

<i>Bombay Army.</i>	
5 Size.	2 Pairs.
6 "	8 "
7 "	24 "
8 "	36 "
9 "	21 "
10 "	8 "
11 "	1 "

100 Pairs.

*Not used on active service.



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CALCUTTA MOUNTED RIFLES CHART AND COMPASS COMPETITION.

From MAJOR J. A. BOURDILLON, *Commanding Calcutta Mounted Rifles*,
to COLONEL F. W. CHATTERTON, *Commanding Calcutta Volunteers*,—
dated Calcutta, the 2nd April, 1887.

SIR,—In accordance with the orders of the officer commanding the district I have now the honor to forward herewith to you, for submission to him, a short report on the competition, popularly known as the "Chart and Compass" Competition, which took place on the 27th February last among the members of the Calcutta Mounted Rifles.

2. The intention of the competition was to represent as nearly as possible the conditions under which despatches are carried through a strange and hostile country, and to award a prize to the volunteer who carried out his allotted task with the greatest intelligence and rapidity.

3. In furtherance of this scheme the donors of the prize—three mercantile gentlemen of Calcutta—selected a piece of country several miles from Calcutta (the locality of the meet being kept a profound secret), where every arrangement was made beforehand. The competition was restricted to efficient volunteers, who had to ride their own *bonâ fide* chargers.

4. On the appointed day thirteen volunteer troopers started, each provided with a watch and compass. They were despatched in pairs in succession, at ten minutes' interval, from a central point, and before starting each was presented with a sealed envelope containing a map of the country and a paper of instruction. Copies of these are appended for information, but briefly it may be stated that each man had to visit three posts which were marked on the map, at each of which he received a ticket. Between these posts each man had to find his way as best he could, and whoever went round the course in the quickest time was to win the prize. Certain roads and lines of railway were placed out of bounds and were supposed to be held by the enemy, and therefore to be unapproachable.

5. The distance was some 12 miles as the crow flies, but, inasmuch as the whole country is much broken up with groves of trees and large swamps, no one could have covered less than 15 miles in doing the course, and many went very much further. The prize was won by Sergeant Rivers Currie, who did the whole distance in the capital time of one hour and 46½ minutes; five others did the course under three hours; three were disqualified or taken prisoner; and the remainder came in between three and four hours after starting.

6. I append three reports selected from those submitted by the competitors. They are not very full or complete, which is accounted for by the fact that the competitors were not aware, till just before starting, that a report would be required of them, and most of them were unprovided with pencil and paper.

7. The competition was, in the opinion of all present, a most successful one. Too much credit cannot be given to the public-spirited gentlemen who conceived the idea and organised all its details, and its successful issue speaks well, I think, for the intelligence of the volunteers who took part in it. It was by no means a competition for speed or horsemanship alone, but success demanded, in addition to intelligence, a knowledge of map-reading and an eye for country: all these are qualities which it should be the aim of all officers, regular or auxiliary, to develop in their men, and I have no doubt that you will agree with me in thinking that it would hardly be possible to conceive a scheme more practical, workmanlike and sensible, whether for regulars or volunteers.

CONDITIONS.

1. First prize, Rs. 400; second prize, Rs. 100.
2. Efficient only to compete on their own horses.
3. Troop horses only. Any one objecting to a horse must do so prior to the start, and the point will be finally determined by the senior officer present.
4. Courses to be fixed by the givers of the prizes.
5. Each course will be marked on a chart and placed in a sealed envelope with a number on it.
6. Each competitor will draw a number which will correspond with a number on a sealed envelope. He will have to ride the course and conform to the instructions contained in the envelope. If any time allowance is marked on the instructions he will get this deducted.
7. Omitting to do any portion of the orders in the sealed envelope will be a bar to winning.
8. As the competition is a time one the men may be started at intervals.
9. Each rider will bring his own compass.
10. The rider may use his knowledge of the language to make any enquiry he likes, but villagers may have instructions to give wrong information.
11. Any rider seen to use a road held by the enemy and identified by two witnesses will be considered as shot.
12. Competition to be on a Sunday in February, as early as a good working piece of country can be found, probably 18th or 20th.
13. The course will be about 10 to 15 miles, so that speed will not be everything in the competition.
14. Three days' notice by postcard will be given to those who enter on the day fixed for the ride, and place of meeting will be posted at head-quarters on the evening before at 5 P.M.

15. Arrivals at starting post after 6 A.M. will not be allowed to compete.
16. Entries must be made on or before 24th January.
17. Uniform not compulsory.

CHART AND COMPASS COMPETITION.

27th February, 1887.

The meet is at the Chandiipur Station on the Bengal Central line, eleven miles from Sealdah.

A special train will leave Sealdah Station at 5-45 A.M. Competitors will take their tickets for Chandipur.

This special train having been arranged, clause 15 of the original programme is cancelled.

In the train competitors will draw in order to fix the rotation of their starting, which will commence immediately after the arrival of the train at Chandipur.

Each competitor must be ready to start when ordered, and will receive a packet of instructions corresponding with his starting number. When ordered he shall open the packet and read these instructions.

Ten minutes allowed for studying them. Thereafter he will be taken to the starting point and despatched by the timekeeper.

Horses can be sent to Chandipur Station on Saturday afternoon with blankets for horse and syce, picketing arrangements and 24 hours' food, or they can be walked out on the morning of the competition. Chandipur Station is reached by going through Dum-Dum in the Baraset direction till the cross pucca road is reached. If a competitor's horse is not on the ground when his turn comes to start he will be disqualified.

Breakfast will be provided for the competitors somewhere near the finish.

Bring a change of clothes with you.

RIDING INSTRUCTIONS FOR No. 8.

This paper of instructions and accompanying map must be shown to no one till after your return from the competition.

You must not speak to any European on the way except the men at the posts, but you may get what information you can from natives.

Don't drown yourself in a jheel. If you think you must cross one enter and proceed with caution ; choose a cow track if possible.

Don't override your horse, particularly in rough, uneven or heavy ground. The way is long.

The pucca road between the starting post and Sodepore (marked in blue on the map) is held by the enemy, except $\frac{1}{4}$ mile at the starting post and the same distance at Sodepore Station.

The pucca road from $\frac{1}{4}$ mile west of Beerathu Station on the Central Bengal Railway (marked in blue on the map) is also held by the enemy.

At the points marked on the map— \times 1 (red), \times 2 (red), \times 3 (red)—you will find men with flags, who will give you a despatch to hand to the timekeeper on your return. The non-delivery of any one of the three will cause your disqualification.

You will go to point \times 1 first, then \times 2, then \times 3, and finish over the bridge you started from.

You must not cross the Eastern Bengal Railway (Calcutta to Barrackpore), but you may cross the Bengal Central line if you like. You are not expected to cross the khal. If you do so be cautious, as we have not explored the bottom.

The Central Bengal Railway is marked approximately on the map with a double red line.

You have an allowance of time of 15 minutes.

\times 1 (red) on the map is the junction of the three roads between Bundeepore and Doperiah.

\times 2 (red) on the map is at the Sodepore Station level crossing.

\times 3 (red) on the map is the north-east corner of the big tank at Numta.

Start and finish is the bridge over the khal.

Breakfast at 12, so hurry up.

Memorandum of Country and Roads lying between E. B. S. Railway on the West, the Khal on the East, Bundeepore on the North, and Numta on the South.

On leaving the bridge over the khal on the Chandipur and Sodepore road, finding that the enemy were posted half a mile in advance on the road, I turned short off to the left and headed for Angapore.

The route I took was not possible for artillery, the lanes being too narrow.

Artillery would have to be taken over the Central Bengal Railway at Chandipur Station and down the main road (from Dum-Dum to Baraset), recrossing the railway at Beerathu, and so to Numta. In crossing the open to Numta it would be necessary to exercise caution as the country is very wet. By making a slight detour to the north and then to the west a good road would be found.

The tank at Numta is a good place for artillery to be posted as the guns could from here bombard the enemy's position on the Ballgauriah and Gourseepore road. The open country round, except on the east and south, is practicable for the movements of cavalry, and the guns could be placed well under cover near the tank.

The lanes are good from Numta to Sodepore. To avoid the possibility of coming on to the Chandipur and Sodepore road (where held by the enemy) I made for the Eastern Bengal State Railway, nearly opposite Cook's stables, and then followed the line up to Sodepore.

Artillery could be taken up to near Sodepore Station, but it would be difficult to get them on the Sodepore road without coming across the enemy, who hold the road to within half a mile of the station.

The country from Numta to Sodepore is for the most part dry, and offers no obstacles to infantry or cavalry.

The road from Sodepore to Bundeepore is good, and is sheltered on both sides by jungle.

The country lying between Bundeepore and the bridge over the khal, and in fact nearly all the country just north of the Sodepore and Chandipur road, is very wet, and for the most part impassable. Good lanes are found from Bundeepore to Kurnah, thence to Madhobpur and on to the khal opposite Paenarah, then along the khal to the bridge. Artillery could be brought this way without in any way being exposed to the enemy on the road.

The distance round by the lanes and across open country must be about 15 miles.

The villagers are for the most part willing to impart information regarding the country and the position of the villages. Only on one occasion had I reason to believe wrong information was given me.

RIVERS E. CURRIE,

Sergeant, C. M. R.

MOUNTED INFANTRY EQUIPMENT.

By LIEUT. A. C. YATE, 29th Bombay Infantry.

As the basis of the remarks I have to make on the equipment of mounted infantry I take the "Regulations for Mounted Infantry" issued on 1st September, 1884.

The dress and equipment of mounted infantry are laid down on pp. 82—84 of the Regulations. They may be considered open to modification, at any rate, for active service.

I.—For instance, as regards officers—

- (a) Ankle boots and puttees are better than high boots. A spare pair of boots is almost a necessity, and a pair of ankle boots is easier to carry than a pair of high boots. Ankle boots are more easily put on and taken off. Puttees (flannel) are perfectly comfortable when dry, and when wet keep the leg warm, whereas leather and canvas when wet afford no warmth.
- (b) Gloves—superfluous on service, except warm woollen gloves, as a protection from cold.
- (c) The *numnah*, at least on service, should be replaced by a blanket, which can be used for the comfort of either the rider or the horse, as may be advisable.
- (d) On service a breast-plate may be dispensed with or, in the case of horses that require it, replaced by a running martingale.
- (e) Every officer should have a pair of saddle bags attached to his saddle. Officers, like the men, must be prepared to move without transport for a week. In their wallets, haversack and saddle-bags, or strapped inside their cloak or blanket, they must carry their rations and spare articles of dress.
- (f) The cloak used should be the Regulation black waterproof cape, long enough to fall below the knee when the wearer is seated on horseback.
- (g) In addition to the articles mentioned in the regulations each officer should carry a prismatic compass, field-book, protractor, one or two hard drawing pencils, compasses and, if possible, a small sketch-book.

II.—As regards the N.-C. officers and privates—

- (a) Puttees are better than gaiters. See I (a).
- (b) The bandolier has many faults. It oppresses the chest. That is not to be wondered at considering that the weight of 50 Martini-Henry cartridges is about 6lbs. 10ozs. and of 50 Snider about 7lbs. 4ozs. The leather stretches in time,

and the cartridges frequently fall out. The bandolier is adjusted to the waist-belt by a strap, which has to be undone before the bandolier can be worked round. In process of working round the bandolier often catches in the shoulder-strap. The cartridges in a bandolier soon become battered and unserviceable. With all these disadvantages, however, the bandolier is, up to the present time, the best medium of carrying ammunition that has been invented for mounted infantry.

- (c) Under ordinary circumstances the rifle should be the weapon of mounted infantry. At the same time the carbine was found to be preferable in Upper Burma. It all depends whether the fighting is to be at long or short ranges. Whether the rifle or carbine is to be carried in a bucket or sling can only be decided by putting each method to a thorough practical test. The Gordon bucket has been lately tried in Burma, with what result is not publicly known. A carbine sling invented by Captain Massy was, it is believed, issued last year for trial in the 19th Bengal Lancers. Result of trial also unknown. A good sling is preferable to a bucket for mounted infantry.
- (d) For close-quarter work and general utility the sword-bayonet appears to be the best existing weapon for mounted infantry, unless the cutlass be better.
- (e). Each soldier should have a pair of waterproof saddle-bags to be attached to the saddle by dees on either side. If the rifle-bucket is adopted then only one saddle-bag can be used.
- (f) Each soldier should have in place of the Regulation great coat, waterproof cape with hood, the cape to be sufficiently long to fall below the knee when the man is mounted.

The above remarks have been made solely with an eye to efficiency on active service. In peace time, as regards dress and equipment, some concessions must be made to appearance.

In equipping a corps of mounted infantry so as to enable it to dispense with transport for a short time there are certain provisions that have to be made for the corps, as a whole, as well as for individuals. Each man can carry his rations (tinned beef, biscuit, preserved vegetables, tea, sugar, &c.), some grain for his horse, a change of kit, spare shoes and nails, stable gear, mess tin and extra ammunition. But the carriage of the following things must also be provided for, *viz.*, cooking-pots, the men's daily ration of rum (this in cases of urgency must be dispensed with), hospital and veterinary medicines and farriers' tools. For these spare led horses specially equipped are requisite. They can be led by the hospital subordinates, farriers and company cooks, as every officer has a second charger that can be ridden by his groom, and carry grain, stable gear and clothing for both chargers, and any other requisites. All the above articles must be so carefully packed and adjusted that the horses can move at a gallop without disarranging the loads.

It is very advisable that the saddlery used by mounted infantry should be specially made to fit the class of animal on which it is intended that the corps should be mounted. When one or more regular corps of mounted infantry are raised in India this will be done as a matter of course. As regards the fitting of saddlery exceptional difficulties have had to be encountered in Upper Burma. The difficulty was to get saddlery small enough for ponies of twelve and twelve and-a-half hands. A similar case is not likely to recur.

SELF-AID ON THE BATTLE FIELD.

A Lecture delivered by Dr. ZIEMSEN, Staff Surgeon of the
German Landwehr.

*Translated by Sergeant J. J. Königs, B. U. L., Librarian,
Quarter-Master-General's Department, I. B.*

GENTLEMEN,—Your ever active committee gave you at our last meeting a lecture in regard to the weapons which are most effective in disabling soldiers in the field in the quickest possible manner, and I have to-day been asked to place before you a few facts to demonstrate how the effects of those weapons upon a wounded soldier can be most readily counteracted so as to enable him to again take the field in the shortest space of time.

I am sorry to say that your weapons have the advantage over our profession so far as rapidity and accuracy are concerned. With your weapons it takes you about one second to kill or disable a man at a distance of 500 metres (or 546·8 yards) ; on the other hand it takes us on an average 500 seconds, or about 10 minutes, to adjust the necessary bandages alone, and after the bandage is put on, it takes months, and often years, to patch the man up, even if it is possible to do so. In this matter I may compare a surgeon to a watchmaker : one blow destroys his mechanical work of art, but only with great labour and continued attention is he able to repair it.

But to give you any idea of the many intricacies of our profession I would be compelled to describe many details of some difficult operations, which, though perhaps interesting, would, I am afraid, give many of you nightmare ! But as such an idea is entirely contrary to my tinenction I will simply mention here that the same principle which has asserted itself in our public organisation has affected the war surgery in a like manner—I mean the conservative principle.

How much our profession has succeeded in ameliorating suffering, and improved in surgical operations, may be seen by the fact that many of the wounded, who in the last campaign, for instance, had the misfortune to get either one or both their ankle bones completely shattered, may to-day be seen parading the streets in so easy and natural a manner that even a doctor would be greatly puzzled to distinguish which foot had been dislocated, so that you can easily perceive how impossible it would be for a non-professional to detect any flaw, so to speak, in their anatomy.

Yes, even dislocation of the neck, which in former times was looked upon as absolutely incurable, although a difficult operation and by no

means devoid of danger, can now be successfully treated by a surgeon. As an instance I would recall to your minds the case of the coachman of the prison van who was conveying the would-be assassin *Nobiling*, who attempted the life of His Majesty the Emperor of Germany in the *Unter den Linden* at Berlin. He ran his van against the parapet of the gate, and broke his neck in the proper acceptance of the term. That coachman was successfully treated and recovered. I can give you another instance—a personal experience of mine. About two years ago I treated an officer who broke his neck at a race meeting at Hanover. That officer now promenades the *Wilhelmstrasse*.

You will readily perceive therefore that our profession can achieve great things, but it must always be remembered that everything depends upon the manner in which each case is handled from the outset. This is especially the case with wounds. The main principle to be observed is that proper measures are taken at the right moment. For an operation to be successful great care must be taken to prevent, as far as possible, any foreign substances making their way to the wound; such foreign bodies will eventually prove injurious to a great degree, and in many instances render all the efforts of a surgeon futile.

It must, therefore, be perfectly clear that from the very moment the wound is inflicted, and when no doctor or dresser is at hand, the treatment may be said to commence, and, if neglected then, little can be done afterwards. With these preliminary remarks I will proceed with my lecture on *Self-aid on the Battle Field*.

Self-aid (selbsthülfe), an expression often carelessly applied, may not perhaps be the most appropriate term to use in connection with the subject; but I am sure you will excuse my choice of it when I tell you that I cannot find another word which so exactly and briefly expresses my meaning.

You are all doubtless aware, through the medium of political newspapers, that in the course of the last 20 years great changes have taken place in the surgical profession by the introduction of antiseptic treatment.

This treatment plays such a considerable part in the subject before us, and is so great a factor, from the very commencement, in the success of an operation, that I am compelled to enter into a more detailed description of it here than I should otherwise be justified in doing.

On the basis of M. Pasteur's experiments, whose name is doubtless familiar to you in connection with his wonderful success in cases of hydrophobia by inoculation, the English, or more correctly Scotch, surgeon Sir Joseph Lister, late Professor at Glasgow and now at the King's College in London, came to the conclusion that every wound can be cured without fear of fever, if, when inflicted, it is thoroughly cleansed and kept in the same condition during its subsequent treatment, and at the same time protected from initial blood-poisoning by the prevention of any obnoxious germs, which are certain to be afloat in the air, settling on it.

Sir Joseph Lister, however, discovered that, exposure to the air when the atmosphere is absolutely pure, is more beneficial than otherwise in

many cases. This conclusion is established when we bear in mind the many interesting and successful experiments made by Sir Joseph at Glasgow during the year 1868.

When once this thesis was properly established Sir Joseph worked indefatigably to utilise it in practical surgery, and we all know how completely he succeeded.

Later on the same method was greatly improved upon, more especially by the surgeons in Germany. All that remained was to select such chemicals as were most likely to have a favorable effect on wounds in their preliminary stages, and these we found in carbolic acid, salicylic acid, iodine and, by far the most effective, chloride of mercury.

The losses from wound, fever and gangrene during the campaigns of 1864-1866 and 1870-71 attracted the attention of all doctors and more especially the army surgeons, and induced them to make a thorough investigation of the ways and means of applying this method in the simplest and surest manner on the battle field.

After several unsuccessful experiments it was decided that a suitable and convenient bandage, easily accessible to the wounded soldier, would best answer the purpose, and each soldier was therefore provided with a bandage ready to hand and prepared for use, as I shall explain to you immediately.

Every infantry soldier, as you know, carries such a bandage stitched in the left trouser pocket. The Hussars and Uhlans carry theirs in the front skirt of their tunics; in all other branches of the service it is sewn into the pocket at the back of their tunic. This is the bandage*—I have purposely kept it in exactly the same condition, as issued to the men of the army, so that I may be the better able to demonstrate to you how easily it may be used and how ingeniously it has been constructed. You will perceive that the bandage is enclosed in a case of oiled cloth, which is simply held together by four stitches. The oiled cloth, be it observed, prevents the bandage from getting soiled or dirty, and also protects it against the inclemency of the weather, especially when it rains, and the bandage is most likely to get wet. This oiled cloth also protects the bandage after it has been adjusted.

On opening this case you will find a safety pin. This is to secure the bandage when it has been wrapped round the wound. You will thus see that even the smallest detail likely to be of use has been carefully provided for.

Next we find a cambric bandage and several small pieces of the same material, all of which, as well as the bandage, have previously been soaked in sublimate lotion (1: 1,000 strong)—a solution strong enough to kill all floating germs and also prevent all threatened germs of disease from penetrating further into the wound or doing any injury. Therefore once this bandage is applied all fear from this quarter is at once set at rest.

We will suppose for instance that one of you has received a gun-shot wound. The first thing to do is to clean the wound thoroughly; this

* Which was banded round.

can be done by washing it in pure water or some other liquid, such as wine or brandy. Brandy is a very good wash as the water procurable on the battle field is very likely to contain many impurities. So far so good. Now, after dressing the wound, the small pieces of cambric come into requisition. You must lay them upon the opening or, if there be *two* openings, *i.e.*, the side where the bullet entered and the gap made when it left the body, a piece of cambric should be applied to each opening. The next best thing to do is to press the wound slightly so as to cause a better suction and thus prevent hæmorrhage. Over these pieces of cambric the oiled cloth is carefully placed, and in the case of two openings the oiled silk is divided, one piece for each opening, the inner side being placed nearest the wound, the whole being then bandaged and fastened securely by means of the safety pin. Thus, so far as the soldier is concerned, the primary object is gained, *i.e.*, the wound is kept clean until the soldier comes under the treatment of a qualified practitioner.

The doctor who has to attend to the wounded later on must, of course, again clean the wound so as to remove such foreign bodies as may have entered with the bullet. He has then to extract the bullet itself.

There are, of course, cases where the bullet may remain in the body without any very injurious effects, but nevertheless, if it is possible to extract it, this should and will be done ; in this opinion, I may add, Sir Joseph Lister is with me. In cases where it is impossible or extremely dangerous to extract the bullet, it remains in the body, and, as you have doubtless heard before this, it travels all over the system and does little or no injury. This is a point I especially wish to impress upon you because I recollect distinctly how strongly the wounded, in the late campaigns in which our country has been implicated, insisted upon having the extracted bullet placed in their hands so as to relieve their minds of all future danger.

This is a mistake as I have just now endeavoured to explain to you ; on the contrary it is often a great deal more dangerous to incautiously remove the bullet from the body. I can assure you of this as I have often seen the membranes and muscles cut through in the most barbarous manner with dirty fingers (there was no water procurable for washing purposes) in attempts made to remove a bullet from a wound.

This treatment, according to the science of the present times, should be altogether rejected. If the bullet must be removed (as in many cases it must) it should be done by the antiseptic method advocated by Sir Joseph Lister, as it is always better to allow the bullet to remain in the body than to permit injurious germs to enter the wound in vain attempts to extract the bullet by a series of fresh wounds inflicted for the purpose.

Should any of you ever be so unfortunate as to receive a gun-shot wound I beg that you will have the patience and fortitude to allow the bullet to remain where it has been lodged until proper measures can be taken for its removal without fear of injury to yourselves.

With regard to copious hæmorrhages I may tell you that such are not at all frequent. As an instance, although I have been in the fighting

line during many campaigns, I have never come across a single case of great hæmorrhage from a gun-shot wound. This may be explained by the fact that a bullet or a fragment of a shell does not inflict the same sort of wound as a sword would inflict. A gun-shot wound is more or less bruised and jagged and the blood vessels close up almost immediately after the wound has been inflicted, whereas a sword cut or a bayonet thrust, being sharp, hæmorrhages are more frequent because there is nothing to stop the flow of blood.

Of course I don't mean to lay down any hard and fast rule that gun-shot wounds are never accompanied with hæmorrhages, because in some cases this does occur afterwards, but then the wounded soldier is almost always under proper medical treatment.

Should, however, hæmorrhage ever set in on the battle field this simple temporary bandage which you see before you is the best and most suitable to stop it, whether caused by gun-shot or sword wound. In fact this bandage is most efficacious in sword or bayonet wounds unless very severe, because such wounds do not, as a rule, penetrate so far into the body, nor do they force so many foreign substances along with the steel as a bullet under similar circumstances would carry. They are therefore more or less surface wounds, but a bullet may cause an internal wound, thereby making the business a great deal worse.

Where a blood vessel is severed or a bone shattered it stands to reason that the wound is far more complicated.

Should the severed artery be on the surface, so to speak, you will observe that the blood flowing from the opening will be dark and sluggish, and the blood will escape from the outer ends of the opening. Should, however, an internal artery be severed the blood is of a light colour and will jet out in sprays from the centre of the wound.

The treatment in each case is regulated accordingly, but so far as the wounded person himself is concerned the simplest way is to apply a moderate pressure to the wound. This can best be done with the aid of one's fingers; the only disadvantage at which the wounded are placed is that the fingers in all cases become benumbed by continuous pressure. It is not advisable to use too much force on a wound; the slightest pressure will be quite sufficient.

Should the wounded soldier be at a distance from the field hospital the best thing I would advise him to do is to bandage the wound in the following manner:—

The first thing to be done is to bandage the wound with the sublimate cambric as already explained; then the nearest round hard substance within reach, such as a stone or a handkerchief knotted, &c., should be immediately applied to the wound over the bandage. This will act as a pressure; and when this pressure has the desired effect (*i.e.*, stops hæmorrhage) a strap or brace or any other bandage should be tied round the whole so as to give even pressure all over the affected part.

I have here with me a tourniquet to simplify the process to you, but a strap of any kind will answer quite as well.

But I do not purpose to enter into any detailed description in regard to the severance of blood vessels, because such a subject can have very little

interest for a non-professional. Were I to do so by to-morrow morning you, who are now listening to my address, would most likely have forgotten all the nice theories which I would try to expound to you. It would be the same with me were you to give me an exhaustive account of the details of your repeating rifles such as were given at the last lecture.

But to resume: the next thing to think of in cases of bone fracture after the wound has been dressed as above described; whether it be an arm, a leg or foot which is injured, the limb must be given a certain amount of rigidity, and this can only be accomplished by means of splints, that is, the wounded soldier takes any kind of a support most handy, such as a bayonet, sword, drumstick, or rifle or any other stiff and resisting implement which will answer the purpose, and places it against the injured part as an improvised splint, and secures it in its position by the aid of a handkerchief, bandage or strap of any kind which the soldier may be most easily able to possess himself of. It is understood that the soldier may not be able to apply a professional ligature because the necessary material is wanting, but the chief utility of such a bandage consists in the fact that the wounded can then be conveyed more easily with less pain and irritation to the tissues, from the battle field to the hospital.

This is almost all that the wounded can do for themselves on the battle field and before medical aid can be summoned.

The treatment consists chiefly in the application of the antiseptic bandage, with which every soldier in the German army is provided, and I would earnestly beg of you, should the necessity ever arise, to use it, as I have endeavoured to explain to you, as quickly as possible.

Before closing my lecture I wish to make a few observations in connection with field hospitals in case of war. Very few of you are aware from personal experience of the great misery suffered by the wounded, but you have doubtless read the history of the Napoleonic wars, the War of Independence, the Crimean war, the Italian campaigns, and are to some extent aware of the numbers of good soldiers who died of their wounds after being admitted to the field hospital.

Thanks to the indefatigable exertions of the Medical Department of the War Office, which has everything to the smallest detail already arranged during peace, and thanks also to the progress made during late years in the medical profession, especially in the antiseptic method of treatment, and further to the many pain-killing properties which have been discovered in chloroform, morphia, cocain, &c, I am thoroughly convinced that every wounded soldier who is once fortunate enough to reach a German field hospital will be saved for his fatherland.

OCCASIONAL PAPERS.

THE following extracts are reprinted from "A Sketch of War as it will be," by Colonel Sir Lumley Graham, Bart., published in Vol. XXXI, No. 138 of the "Journal of the Royal United Service Institution":—

"A SKETCH OF WAR AS IT WILL BE.

IT would be difficult to find a subject of deeper interest to the readers of this Journal than that which has been chosen for this article. At the present season, when each succeeding day brings with it a fresh crop of war rumours from all parts of Europe; when all the great military Powers, which have for many years vied with one another in perfecting the organization, equipment, and training of their Armies, seem to be putting the finishing touch to their preparations; when many think that the outbreak of another great European conflict is imminent, and but few believe in the possibility of its being postponed for any length of time: at such a season as this, it is but natural that we should take a mental survey of the situation, and endeavour to form an opinion as to the probable chances of the coming struggle. We know not yet how the different nations will be arrayed, but we cannot fail to observe that, during the last few years of peace, progress in military efficiency having been universal throughout the European continent, the same general system of organization being, moreover, now common to all, and the disposable forces of each nation not being widely different in point of numbers, it is very difficult to assign to any one Power the superiority over any probable opponent. Nor is this the object of the present article, which only pretends to present to the reader a slight picture of the manner in which war will be waged between civilized nations the next time it occurs. In order to do this I have translated some portions of Parts IV and VII of Baron v. d. Goltz's great work "*Das Volk in Waffen*" (the Nation in Arms), which enable us to realize to ourselves the enormous proportions of modern warfare, and the great difficulties caused thereby to those in command, whilst suggesting to us means for overcoming those difficulties. Unless we, too, become a *nation in arms*, which will, I hope, never be necessary, it is highly improbable that any British Commander will ever be called upon to conduct war on the huge scale represented by Colonel v. d. Goltz; but it is all the same desirable that the British military student should form his idea of war from a life-size representation rather than from those in miniature, to which he is accustomed, and in which alone he is likely to be engaged, therefore I hope that the following pages will be useful.

(L. G.)

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IMPORTANCE OF DISCIPLINE ON THE MARCH AND IN ACTION.

When we realise the size of armies, we may well ask ourselves how it is at all possible to direct such large bodies of men. The answer to this question is that discipline alone makes it possible to move and guide them. There is no better solution of the problem. But the word "discipline" means so many things, that what it comprises does not seem sufficiently well-defined,

and the subject requires further explanation. Discipline is generally understood to mean good order and good conduct, upheld by steady maintenance of strict regulations. But with reference to this, we must observe that a severe code of military law is by no means necessarily accompanied by regularity and good conduct. There never was an army better disciplined than that of Germany during the last war, yet there never was a large army which took the field under such a mild code, which was moreover administered in the most humane manner. On the other hand, the history of former as well as of more recent times furnishes many examples of the co-existence of Draconic severity and of misconduct, without any diminution of either.

The French Republic of September 4th, 1870, kept a bullet in store for every disobedient soldier, and instances of military executions were by no means uncommon in its armies. Yet discipline was and continued to be loose. The actual fundamental relations between the two things was natural enough. All laws spring first of all from the surrounding circumstances and only react upon them later on. We must not, however, imagine that discipline comes naturally in a well-regulated society, and that it is only the consequence of social morality. Not so; the trials to which the soldier is exposed are too severe for this to be the case. It follows as a matter of course that crime is less frequent in the army of a cultivated nation than in those of coarser races, but discipline requires more than merely negative services. It demands of the soldier that he should make nothing of venturing his life in order to overcome the enemy. It demands of him extraordinary efforts, and leads him to look on the extraordinary as something quite commonplace and habitual. The best explanation of discipline is found in a saying of Darwin's, to be found in his "Descent of Man": "The superiority which disciplined soldiers have over undisciplined hordes is principally a consequence of the confidence which each man places in his comrade." This unqualified confidence is doubtless the best agent by which discipline works, and it enables us to form a just appreciation of the peculiarity of what we understand by this much-used expression. There is, however, doubtless an absolute necessity for a code of law sufficiently strict to cause obedience to a superior to seem imperative. "The force of the passions cannot be restrained without the help of law" is a saying of Scharnhorst. Insubordination must, whenever it shows itself, be at once checked promptly and with sufficient vigour.

It would be a fatal error to imagine that a strict administration of the law can be dispensed with, as this constitutes the framework upon which discipline is constructed. The impression thereof is all the deeper in that the necessity for obedience extends alike to high and low throughout the army. Example has a far greater effect than precept, whether given in writing or by word of mouth. When the soldier sees those above him obey, he takes the lesson to heart. It is not, however, enough to obey the superior who is at the moment giving orders; it is to duty above all that obedience must be paid. Nothing should appear to the soldier more holy than the requirements of his calling. The common, every-day duties are more intelligible than the higher duties to the private soldier. Hence comes the value of the regulation in our army that the Officer should begin by performing all the duties of the private. He must first learn to obey, so that he may be able to command; that is to say, in the right manner and in a way intelligible to the plain sense of the common soldier. Further, this is his only chance of becoming thoroughly acquainted with the performance of the lowest class of duties according to his knowledge of which the men will after all really judge him. The zeal with which the, so-called, *minor* duties have been for so long a time

carried out in the German Army is by no means merely the result of routine or of unproductive pedantry, but is rather due to the moral aim of creating in the soldier's imagination a representation of duty in a manner adapted to his intellectual powers. The conscientiousness in small things should certainly not be confined to the mere technical details of military life; on the contrary, the many things which do not appear on the surface and which are required to make a man of the soldier deserve special consideration. A disposition to cleanliness, love of order, punctuality, carefulness, faithfulness, and decision, will best contribute to the establishment of good discipline. The custom has hitherto prevailed of leaving certain minor details of administration, such, for instance, as concern the clothing and subsistence of the men, in the hands of company Officers. This is not done with a view to economy, but in order to strengthen the influence of the Officer over those under him by means of the intimate intercourse thus produced. An Officer's work in the stores and in the barrack-room, in visiting cook-houses and other offices, makes of the company commander the guardian and main prop of discipline, the father of his men, and the expression of the soldier's artless feeling is full of significance when he jokingly calls his Captain, as he is wont to do, the "old un," although he sees older Officers giving the law to him.

This peculiarity in German army life, in combination with the belief in the necessity of a strict performance of duty, has created a feeling of most complete unity in the ranks. Therein consists our strength. The most complete interdependence between Officers and men has arisen from the zealous performance of duties common to both. Every man in the ranks knows by experience that his Officer will in no case desert the unit to which he belongs, that the same unit is like a family, with the same interests in common, and that it will always hold together in need and peril. Hence springs that confidence of which Darwin speaks, and by which that great judge of human nature explains the superiority of a disciplined force. The soldier meets the enemy's bullets with composure, because he is convinced that his comrades have the same feeling, and because he cannot think of leaving them in the lurch. The moral force derived from the feeling of interdependence remains firm when the excitement and confusion of battle render control impossible, and regularity, which is the offspring of law, has ceased to exist. The sentiments of duty and honour rouse at such moments in the heart of each soldier the firm resolve not to be behind his neighbour. During the last wars every single body of troops being thus inspired was ready to attack a superior force of the enemy whenever it appeared expedient to do so for the general good, or whenever a favourable opportunity presented itself.

Every General who ventured to take this serious responsibility did so in the assurance that every corps within reach would hurry to the scene of action as soon as it heard the thunder of the guns, and that the work so successfully commenced by himself would be completed by his comrades if his own strength proved insufficient for the purpose. Every leader was justified in thus thinking and in thus acting, down to the youngest subaltern at the head of a section of skirmishers. It is evident how great an augmentation of power thus accrued to the German army, and we can also well imagine how the Commander-in-Chief, notwithstanding his limited influence over the course of combats and battles, could yet prosecute these decisive operations with full confidence, knowing as he did that, though their procedure might vary, the different fractions of his army when put in motion would all aim at the same end, namely, to get at the enemy. No Officer in command who could possibly reach the scene of conflict would keep away

from it. The "discipline" of the German army was a sure guarantee of this.

Such is the way to render troops really mobile. The more numerous they are, the better must be the discipline, and we require it now more than ever, but it must be rightly understood if we wish its power to be displayed; it must be identified with the complete agreement of all members of our hosts in the object of their desires, in the faithful performance of duty, and in devotion to the service of king and country. Although the principal source of discipline in an army is to be sought in moral influence, still in order to maintain it we must also look to purely material elements. We need hardly say that if troops are exposed in warfare to insupportable hardship, to fatigue surpassing what human strength can endure, to demoralizing influences in battle, to want and distress, the best discipline will in the long run suffer, and above all that unnecessary hardship and loss have a loosening effect. A great deal depends upon organization. It is of primary importance that the formations to which troops have been accustomed in peace should be preserved in war, for their disruption will always have a prejudicial effect on discipline, and the mischief thereby caused almost always outweighs the advantages which may be derived from breaking up tactical units so as to increase their number.*

It is well known, for instance, how much the discipline of the Danish army was affected in 1864, in consequence of the order issued by the Minister of War that all battalions should be subdivided, so as to form a double number of war battalions. However, it is impossible to break up the family feeling in our army. It is a part of the inner constitution of our military system that every Commanding Officer has more confidence in, and exerts more influence over, his own regiment, battalion, or company than he would in the case of a body of troops placed for the first time under his command at the outbreak of a war. Again, the soldier always obeys Officers known to him more readily than strangers. The maintenance of units as originally constituted is of such paramount importance that secondary considerations of convenience on the line of march and in battle must not be allowed to weigh against it.

It may generally be accepted as a fact that a complete regiment of three battalions will be able to render much more service in war than three battalions taken from different regiments, and shuffled up together under one leader for the special occasion. Were we to mingle in an arbitrary manner together detachments from different Army Corps, the question of provincial peculiarities would then come to the fore. Some races in the German Empire require severe treatment, whilst others do better under a lenient rule; some should be humoured, others guided with a tight hand. A well-timed reproof will be most effective with the one, generous praise with the others. There is a considerable difference between the characteristics of a Brandenburger and of a Westphalian, between those of a Rhinelander and of an East Prussian. The Officers who lead the men in war should have been previously acquainted with them in peace-time. It is of great importance to discipline that men who have returned to civil life after doing their time with the colours should, if recalled to the ranks on mobilization, rejoin

* These sound principles have, I think, never been completely recognized in the British Army, for the system of grouping together detachments for some special service has always been far too prevalent. Never, however, was this vicious system carried to such an extravagant pitch as in the last campaign on the Nile, and as fortunately no positive disaster resulted therefrom, we may, I fear, expect a repetition of the same error in our next war. If so, I hope that we shall only have savages to deal with.

the same units in which they received their military education. They will thus be brought into association with old acquaintances, both as comrades and superiors, with whom they will easily get on good terms again; in fact they return to a position with which they are familiar, and in which they soon feel themselves quite at home. They have once more to have a share in the fortunes and in the reputation of the very corps to which they were before so proud to belong. The feeling of *esprit de corps* comes into play, a feeling which creates a noble emulation between bodies of men. The various considerations which must be duly attended to at the time of mobilization will, it is true, not always admit of a reserve man joining his own former corps, but this should be the rule whenever possible. The spirit of tradition and *esprit de corps* can only be well developed if Officers are retained in the same units with as little shifting about as possible. This particularly applies to the case of commanders of companies, squadrons, and batteries, in whose hands is the instruction of the men. Again, the peace strength of units should not be too much reduced, otherwise they can hardly hope to keep up their traditions, besides which a considerable numerical strength is required for certain branches of instruction. Companies and battalions with too low a peace establishment lose the power of acting as independent units, for they cannot represent properly at field exercise the action of companies and battalions on a war-footing, in consequence of which you are driven to the objectionable practice of mixing up several of these units and placing them under command of one of their Officers. This is what happens in France. If practised with us it would break through the fundamental principles of all our military education, of all order and discipline, which consists in the personal responsibility of every Officer for the efficiency of the body of men under his immediate command. His personal interest in the men, his personal influence upon them, would be diminished, and sooner or later discipline would suffer. We may mention another kind of discipline as necessary, and we may call it the intellectual as distinguished from moral discipline. If men's minds are not under control it becomes all the more difficult to manage them.

This is often experienced unpleasantly in an improvised army. When bodies of militia or of volunteers are assembled in an emergency there is, as a rule, no want of very capable and educated men amongst the Officers, as the pick of those who have not as yet adopted the career of arms must under such circumstances take the field. Many members of the highest aristocracy in France joined the armies of the Republic in 1870, occupying the lowest grades. There was thus plenty of intelligence in the ranks, but only of an undisciplined kind, with a great want of uniformity as to instruction, which led to a want of unity in action. We do not by this intend to imply that the leader should be bound to act according to a prescribed system. Not so; for cut and dried forms do not suit war. Still, there should be a certain mutual agreement as to the mode of working out military problems, and this will be the case if you succeed by means of instruction and practice in implanting general principles in the minds of your Officers. Those principles should be inculcated by the instructor as leading guides to action, just as general directions (*directives*) are issued by the General when providing for some particular operation.

The art of handling troops should be taught according to a regularly recognized system. Only thus can we arrive at obtaining any similarity of procedure on the part of Officers in the execution of any definite operation; not that we expect or wish them to work exactly in the same manner, but only to be guided by the same principles. The solution of theoretical problems set as exercises to different Officers in peace-time presents plenty

of variety, being intended to test the intelligence, and therefore leaving plenty of room for difference of opinion. In war everything is much more simple. When, for instance, the German armies were assembled on the Rhine in 1870, you could hardly have found a General amongst them who did not at once make up his mind to an advance into France, for we all felt anxious to take advantage of the superiority of our Army both in respect of numbers and of efficiency by at once assuming the offensive in a vigorous manner, for we had all, as it were, inhaled this principle with the air of our military school. When this discipline of the intellect exists a Commander-in-Chief may with confidence allow much independence of action to his subordinates, as he may be certain that wherever he cannot intervene in person affairs will be carried on, if not exactly as he would have wished, at all events with the same practical result. Uniformity of intellectual culture is only possible when all Officers occupy the same social position, and it must necessarily be absent in armies whose corps of Officers is partly recruited from the ranks, partly from military schools and academies. For such armies complete unity of action can never be assured.

* * * * *

MARCHES, EXPEDITIONS, AND QUARTERS.

Slowness and weariness characterize the movements of large bodies of troops. You realize this fact when, after the band has ceased playing, you get a near view of the individuals composing the mass instead of that distant glimpse which Clausewitz supposes.* Here one poor fellow limps along with heavy knapsack on back and rifle on shoulder, struggling to keep up, and you can hardly help fancying that you yourself feel the pains which an ill-fitting boot inflicts upon his poor galled feet. Another struggles on with forehead bathed in sweat, and with pinched features, which clearly show exhaustion. Here and there a man completely worn out and near his end is led aside and breaks down entirely. From hour to hour the train of men, horses, and carriages creeps on with greater slowness. Everything is wrapped in dust, so choking that eyes and lips can hardly be opened. The sun has no mercy, shooting its burning rays without pity against the mountain side along which the road winds, and thus generating insufferable heat. The head of the column alone can move with some rapidity, the further back you go the greater the apparent fatigue; here no songs are heard. The longer the column, the more encumbered with guns and wagons, the greater its unwieldiness, the more frequent the stoppages and involuntary halts. The smaller the body of troops, the more easily and comfortably it moves, and therefore the more rapid its progress. The imagination of the aspirant to command, who is learning war from books, requires correction in nothing more than with regard to the speed with which large masses can progress. Giving the rein to his fancy, he directs his columns on the map, after rapidly forming his plan, first to one place, then to another, making them reach points of importance very quickly, so as to occupy these posts before the enemy can arrive, after which come deployment and attack, the steps following one upon another without interruption. But should this ideal future be converted into matter of fact, you will then see how far actuality lags behind intention.

The columns advance at a pace the slowness of which is very trying to the patience, and the fear that the enemy will be the first to reach our objective grows stronger every minute, for imagination lends wings to the foe, whose movements we cannot follow so closely as those of our own people,

* The author here refers to a picturesque passage which he quotes from Clausewitz, and which I have omitted.—L. G.

and in our fancy we see him striding on at a great rate. It often happens too that orders to march have been delayed too long, and that the time required for the movement has been underrated, but the inexperienced leader has no power of imparting to the masses the fire which burns in his own breast. The heavily-laden foot soldier looks with much indifference at the Officer who harangues him from the saddle; the most he does is to step out a little while the chief is close at hand, soon, however, resuming his former rate of marching, for he knows by experience that if he always answered to such appeals with extraordinary exertions he would soon come to the end of his strength. It is terribly difficult to rouse up the whole column out of its snail's crawl; nothing will do so but the thunder of the guns, which is sure to quicken the steps of the brave. The wonderful difference between the marching performances of troops on different occasions is very remarkable, and not always to be explained by differences of nationality and of quality. A march of two or three miles, hardly noticeable on the map, at one time almost uses up a body of men who on another occasion accomplish a march of double the distance without apparent distress. Wind, weather, state of the roads, condition of the men, after-effects of a previous state of things,* habit which affects this branch of military work more than any other, lastly, the personal influence of the Officer who is demanding those exertions of the men, are all factors in this case. Assuming three miles ($13\frac{1}{2}$ English miles) to be a day's work which the soldier will perform under ordinary circumstances in six hours, although under difficult conditions he may take eight or even ten hours to accomplish it, the whole day being thus taken up, we yet find Buonaparte doing this distance with his army for seven consecutive days, in the high mountains too, when crossing the St. Bernard. On good ground, five, six, or seven miles ($22\frac{1}{2}$, 27 , $31\frac{1}{2}$ English miles) were not considered by him excessive distances for whole Army Corps to get over in a day. Murat's cavalry did more than four miles (18 English miles) daily for weeks together when following up the Prussians in 1806.† In later campaigns we find performances equal to and even greater than those frequently recorded on certain days. On the afternoon of the 16th December, 1870, the 9th German Army Corps stood at "La Chapelle Vendôme," between Blois and Vendôme, in readiness to move. When it became known that the German position on the Loire was threatened, Prince Frederick Charles put this corps in motion towards dusk on Orleans, nine miles ($40\frac{1}{2}$ English miles) distant, although it had before reaching "La Chapelle" already marched two miles (9 English miles), and had afterwards spent some hours on fields soaked with rain.

The roads leading to Orleans were bad, having been newly metalled; moreover, wagon trains which were following the 11nd Army met them and delayed them in their progress. Yet the Army Corps reached Orleans next day at noon without any loss worth mention, 10 , $10\frac{1}{2}$, 11 miles (45 , $47\frac{1}{2}$, $49\frac{1}{2}$ English miles) in from 33 to 36 hours, including a halt at night as well

* Such conditions, for instance, as made themselves felt in the march of the 11nd German Army from Metz to the Loire. Although the daily marches were not at first long, although the weather was pleasant and the roads good, a considerable number of men became non-effective, for the whole army had passed through a very severe and trying time, suffering hardships of all kinds just before the capitulation. Although later on, "the marches became much more severe they did not produce the same bad effects, because the men gradually recovered their tone and the habit of marching."

† Murat marched, in the first instance, in pursuit of Hohenlohe from the field of Jena to Prenzlau, then in pursuit of Blücher to Zirbeck, thence through Posen to Warsaw, which he reached on November 28, after marching altogether 183 German miles (846 English miles) in six weeks (about 20 English miles a day).

as the time spent at "La Chapelle." One battalion in this column could boast that it had not left one man behind. Only 13 horses out of 4,000 broke down. This feat compares favourably with the best performance of any period.* Suwarrow marched from the neighbourhood of Alessandria to the Tidone in June, 1799, a distance of 11 miles (49½ English miles) in 36 hours. In November, 1807, when Junot made his dash on Lisbon, he marched the 35 German miles (148 English miles) between Salamanca and Ciudad Rodrigo through Alcantara in only five days over an inhospitable country and amidst heavy snowstorms, continuing his advance on Lisbon in the same manner, but his army in so doing suffered such loss as to be almost entirely dissolved. We might cite examples from ancient history, but these are always somewhat doubtful, not having been exposed to the rigorous criticisms of modern historians. The instances quoted are, however, numerous enough to prove that one would be liable to great mishaps if one were only to reckon upon average rates of marching, for there is a wide margin for error.

One consideration alone is sufficient to account for the great superiority which the better marching army of the two has over that opposed to it, namely, that the commander of the former is always able to concentrate his forces more quickly than his adversary and to attack him with superior numbers. Hence arose the well-known saying that you can vanquish your enemy with your boots. During a combat a momentary impulse may work wonders, but it would have no effect during a long and severe march. It is very difficult to urge on a body of men who are beginning to get tired, even if vigorous measures be adopted, for as soon as you find some hundreds of men lying in the ditches, severity becomes impossible, and those who don't choose to go any further may throw themselves down and fall out with impunity. You may form a good estimate of the quality of the troops from the number of stragglers during a hard march. The influence of discipline shows itself clearly on such occasions. How much each individual may contribute to the general result is shown by the many examples of armies which, although inefficient in other respects, have after defeat shown an astonishing amount of solidity and marching power. Fear of the pursuing foe and the instinct of self-preservation urge on at such times each individual, and thus increase the endurance of the whole mass. It is very desirable to keep the men in good marching condition in peace-time. Where military training is actively carried on in an army, the constant exercise obtained at field manœuvres, also in moving to and from the drill ground and the ranges, will keep men up to the mark; still it will also be advisable to make special marches to long distances solely for practice in walking.

Owing to the organization of the national armies of the present day, they are to a large extent composed in war-time of men who have not been in the ranks during the period of peace immediately preceding the mobilization. Still the oft-repeated assertion that on that account it is not worth while to knock troops about in peace-time is erroneous, for although men

* The 14th Infantry Regiment made a remarkable march between the 4th and 16th November, 1870, from the neighbourhood of Metz to Paris. It was escorting trains, ammunition columns, and artillery of the 11th Army Corps, the greater part of which was despatched by rail, and it got over 42 miles (173 English miles) in thirteen days. 136 men became non-effective from all causes during the whole period out of a total strength of 2,547 men. It should be noticed also that the regiment had lain before Metz since 18th August, and therefore had all that time no regular practice in marching. The 10th Army Corps marched to the battle-field of Vionville on 16th August, five miles (22 English miles) and the 11th Army Corps to that of Gravelotte, from five to six miles (22½ to 27 English miles).

do lose the mechanical habit of marching when they leave the colours and return to civil life, the traditions of remarkable feats once performed still remain alive in their minds. Exertions which previous experience has taught them to be nothing out of the common way are more easily borne than those of which we have no previous knowledge. If we were to give up the habit of practising offensive movements and long marches in peacetime, the Army would lose the means of judging how much the human frame inspired by good will is capable of enduring without serious injury, and in consequence the demands upon the men's powers would be reduced from year to year, soldiers and Officers accustoming themselves by degrees to look upon what is really only a moderate performance as something remarkable, and such it would become in fact, but only in the minds of the performers. If a misfortune happens once in a way during the summer heats when a hard bit of field exercise is being performed and a man, young and vigorous, falls a victim to sunstroke or to over-exertion, many a voice is at once raised to advocate, on account of what has happened, the abolition of field exercises, without reflecting upon the necessity of giving every soldier the experience which enables him afterwards to undergo the hardships inseparable from campaigning in a far better spirit than if he were a mere novice, and thus to bear them more cheerfully. If you omit every exercise in peacetime which might possibly cause a mishap to some individual you would be treating soldiers very unfairly, for you would be rendering them helpless and weak in war, thus doubling their losses. The period of long marches of concentration, which in former days afforded the best opportunity for regaining the habit of marching, has passed away. In these days troops march straight away from the railway station to the enemy. There is no opportunity for getting the men into condition before the commencement of active operations. Therefore the exertions at first required of them should be moderate. If the 9th Army Corps had attempted at the beginning of the war in the Palatinate the great march which it afterwards made and which we have already alluded to, it would probably have lost a third of its numbers. It is only after war has been going on some time, after liberal field rations and exercise have strengthened the muscles, and after the weaklings have been used up, that extraordinary efforts can with safety be demanded. Much of course depends upon suitable arrangements being made as to the march. It would take up too much space to go into details about them.

A soldier when on the line of march is less affected by the actual distance he has to travel than by the length of time he is kept under arms and with his pack on. Three, four, five, and even six miles ($13\frac{1}{2}$, 18, 22 $\frac{1}{2}$, 27 English miles) are no extraordinary day's work for a good walker. Only think of the holiday trips which one has made in one's youth to the mountain top. It does not require a professional pedestrian, an Albanian, or a Spaniard to demonstrate that even ten German miles (45 English miles) may be walked in a day, for plenty of German artizans and soldiers on furlough have done as much in their anxiety to get home. But it is quite a different thing to roam about in light clothing without constraint and at your ease from marching in the ranks buttoned up in uniform and in complete marching order. The time which the soldier spends thus accoutred should be limited to that which is absolutely necessary for doing the distance. All useless standing about and waiting should be avoided, to ensure which the arrangements should be varied so as to suit the different circumstances. The head of a column marching away from a large encampment must move off hours before the tail, and it would be a great mistake to make the whole force get under arms at the same time. If the troops have been cantoned on

the previous night in a number of different villages, and it is wished, as used formerly to be the case, to rendezvous before marching off at some one spot, the battalions destined to bring up the rear of an Army Corps would have to remain five or six hours at the place of assembly. It is therefore better to collect them into small bodies according to the situation of their night quarters, and to make these groups defile by the bye-lanes into the high roads, and unite just as tributary streams join one another and by degrees form a large river. Careful forethought in making dispositions for the march have great importance on account of their effect on the *morale* of the troops. Every hardship which appears useless in the common-sense view of the soldier annoys him, but he will cheerfully bear even greater hardships when he can understand the necessity thereof. His feeling in this respect is generally founded upon reason, and is not a mere question of routine. Blucher's well-known saying, "Night marches are more to be dreaded than the enemy," is as little worthy of general acceptance as any saying of the kind, for with bright moonlight one can march on good roads without any difficulty almost as fast as by day, and even under unfavorable conditions good troops have in all ages made night marches without damage to themselves. The campaigns of Frederick and Napoleon furnish many examples of this. The German Army Corps, too, in 1870 marched on the 16th December well into the night so as to do some four or five extra miles (18 or 22½ English miles). The example of Werder's army has already been adduced, and how much a comparatively small force can accomplish by a night march was shown by Commandant Bernard when he pushed with his (*chasseurs les Vosges* from Lamarche to Fontenoy near Toul to blow up the railway bridge. His little party of 1,100 men had to make use of bad roads, often, indeed, going across country, through woods and over hills in deep snow on the night of the 18th—19th January, 1871, doing altogether 40 kilometres (26 English miles). He stood fast during the next night, being meantime disturbed by an alarm, marching on during the night of 20th—21st with 300 men a distance of 35 kilometres (22 English miles), and again 60 kilometres (37½ English miles) further on the night of the 21st—22nd, besides driving off the small German guard on the last night and blowing up the bridge. In addition to this, he and his party had to cross the half frozen Moselle river under difficult circumstances. What is really "worse than an enemy" in a night march is the disturbance of the night's rest, combined at times with long distances and bad food, as was the case in 1806 during Blucher's march. During the same campaign L'Estocq's corps made many night marches, and this in winter, without damage to its efficiency.* Between the afternoon of the 2nd February and the night of the 7th, L'Estocq did over 20 German miles (90 English miles), chiefly along bye-roads covered with snow, and mostly at night. This does not include marches into cantonment and to the places of assembly. Notwithstanding all this exertion the little corps was able to make on the 8th February its famous march to the battle-field of Pr. Eylau, where it decided the fate of the day. The conventional dread of night marches, which cause them now to be looked upon as a sort of mortal sin in a military sense, requires to be eradicated. In future wars when great masses have to be moved in a small space, several Army Corps being obliged to follow one road, we shall not be able to dispense with night marches. When they are made, care must be taken that the soldier gets his full allowance of sleep, for he cannot dispense

* No troops have probably had so much practice in night marching as the British in India, and some notable examples of both night and day marches might be cited from the history of the Mutiny.—L. G.

with it whilst undergoing the great physical exertion of field service. There is one thing worse than an occasional night march, and this is the custom of issuing orders too late, owing to which the men are as a rule kept awake late into the night. The same holds good of getting under way too early in the morning. The so-called soldier's rule^o that it is better to march out of night into day than out of day into night is a mistake. If you do the former thing it means that no one has had his night's rest, whilst if you do the latter it signifies only that you get to your night's quarters rather tired. Meckel gives the right rule when he says that in the case of large bodies of troops they should never, if it can be avoided, commence their march before 6 A.M. in summer, and 8 A.M. in winter. Even then, each company, squadron, and battery will have to get under arms at a very early hour. Good order on the line of march makes things easy, and you should insist upon good order being kept from the very beginning, and not wait till disorder has commenced. But good order should be maintained simply for the purpose of lightening the soldier's labours; all annoying martinism should be avoided. Extraordinary indulgences, such as carrying the men's packs for them, and such like, are justified by extraordinary circumstances. If such alleviations cannot, however, be allowed, once and for all, it is better not to spoil the men by giving them advantages which they will afterwards miss terribly if deprived of them. Military manuals lay great stress on the service of security when on the march, but too much is made of this, for troops when on the march are quite ready to go into action. What we really require on such occasions is reconnaissance. We are looking for the enemy and we require information about him. We know that the cavalry divisions which precede us are doing their best to obtain it. It is customary, too, for a separate advance guard of all three arms to precede the column, thus freeing it from apprehension of surprise. If shots are heard in front, if the column comes to a halt, if it is reported that the enemy is near at hand, uneasiness and disquietude will otherwise spread through the whole force. Both Officers and soldiers are affected and the movement is disturbed. If on the contrary an advance guard is half an hour's march in advance, it will take upon itself the consequences of all that may occur on the march, and thus the main body enjoys a happy feeling of security, for it feels that an obstacle must present itself which the advance guard cannot deal with before the rest of the force is called upon to act.

But the advance guard need not be strong. Formerly it was considered correct to employ a third or a fourth of the whole force on this duty. The propriety of this rule appears very doubtful, for by adhering to it the General loses all control over a considerable portion of his force, as he creates a command independent of his own.

The greater part of the cavalry is always attached to the advance guard, even when cavalry divisions have been sent on in front; for none but horsemen can keep up a proper communication with the latter and transmit intelligence swiftly from them to the rear. This rule, however, does not hold good on impassable wooded mountains, or even in particularly intricate and roadless countries, mountainous and otherwise, or in passing through long and difficult defiles, in passes, or on causeways where it is difficult for

* I think that the "soldier's rule" is the right one, and that "it is desirable to get over a march as early as possible, to give time for camping, cooking dinners, and long rest." (See a paper on "Marches," by the late Sir G. P. Colley, when a Major and Professor at the Staff College.) To march out of night into day is disagreeable no doubt, but, I think, less harassing to troops than marching out of day into night.—L. G.

a horse to move, and where considerable bodies of cavalry could not possibly operate. In such situations infantry must form the head of the advance guard. Some artillery will always be of use, for this arm will be the first to detect whether any obstacle thrown in our way by the enemy is in earnest or not. Even dismounted troopers pushing on, carbines in hand, may easily be stopped by a handful of determined men posted behind a barricade or on the outskirts of a village or wood, whereas gunners will lay the ghost with a couple of well-aimed shell or shrapnel.

Moreover, an advancing enemy will be more easily stopped and forced to show his strength by unlimbering a battery than by any other means. An advance guard only requires a small force of infantry. As before said, it must be strong enough to give the main body which is following in its footsteps time to form line of battle. The experience of the last wars has, however, taught us that the main body as a rule did not form up because, owing to the pressing necessity which existed for supporting the advance guard when already seriously engaged with a superior enemy, the troops had to be brought into action little by little and higgledy-piggledy. This went on as a matter of course. It is difficult to make out at first whether the opposition which an advance guard is going to encounter will be strong or weak.

A commander of an advance guard who halts as soon as the event appears to him doubtful will delay the advance, and must expect to meet with severe censure if after all the enemy proves not to be in force. Every good soldier prefers being blamed for excessive daring rather than for too much caution. Should the affair turn out badly in consequence of the former line of conduct he may still console himself by saying with Francis I of France, "*Tout est perdu fors l'honneur*;" but in the other event he has no consolation, and in an army with an inclination for active enterprise no Officer will be placed on the shelf at the end of a war because he has once shown want of proper caution if he has on the whole gained a character for daring and enterprise. This is much more likely to be the fate of one who, though admitted to be well instructed and thoughtful, is considered somewhat too cautious.

Therefore we may be all the more certain that every courageous advance guard commander will in doubtful cases resolve to attack. If then he has besides cavalry and artillery a whole regiment, or even a brigade of infantry at his disposal, he has at once a strong inducement to try the fate of battle. What commander at the head of such a force would allow it to be said that he permitted the enemy to deceive and to stop him by a bit of bounce, or that he let a favorable opportunity escape of giving that enemy a serious blow? Better far to dare!

A combat can easily be stopped as long as only your cavalry and artillery are engaged. The latter are a longish way from the enemy, and the former can use the speed of their horses to get away if advisable; but it is more difficult to break off the action if infantry is once engaged, for it is not possible to recall at once all the scattered parties. If you succeed in stopping the fire in one place it breaks out in another.

Bugle calls can seldom be used on account of the misunderstanding which may arise amongst neighbouring bodies of troops. Then if you succeed at length in getting your own skirmishers to keep quiet, the enemy, who is in consequence no longer held in check, makes use of the opportunity to press forward, thus forcing you to resume hostilities in self-defence. And so it comes that after a good many alternatives the commanders see that things must be left to settle themselves. The stronger the force of infantry engaged the greater the impossibility of breaking off an action. For instance, if the commander of an advance guard has only a single battalion

to dispose of he will be more easily induced to come to a halt on meeting with resistance, with a view to giving the Divisional or Army Corps Commander the power of deciding upon the line of action. No one can expect him to attack in earnest with such a small force of infantry, while at the same time this force is sufficient to overcome an opposition only intended to deceive. When the reconnoitring cavalry division of an advancing force with the addition of one or two battalions and some infantry from the advance guard is not enough to force a passage, a really serious combat generally becomes necessary to overcome resistance, and the General had better leave this to be decided by the whole of his forces. We thus come to the conclusion that even in the case of a Division or of an Army Corps a single battalion will be enough to follow the mass of reconnoitring cavalry, affording, as it will, sufficient protection to the artillery of the advance guard unless this only consists of horse batteries which accompany the cavalry. If it is evident beforehand that the advance guard will have a special mission, such as that of quickly securing some position, it will naturally be strengthened, and its composition will be adapted to the purpose of carrying on a serious engagement.

The best way of gaining time for the deployment of your main body is to push your cavalry well forward, so as to gain early notice of the enemy's approach, and to be able to determine in good time when and where it is best to form the line of battle. If it be necessary to gain time, it will be better to do so by bringing some batteries into action, thus forcing the enemy to deploy, than by engaging a large body of infantry. The former course commits you to nothing, while the latter course will quickly bring on a general action. The case is different when you are in retreat and wish to avoid fighting. Rear guards must be stronger, so as to be able, when favourably situated, to punish the enemy if he presses on too much, whilst the main body continues its retreat without interruption, but even in the case of rear guards an obstinate battle is a mistake, because the difficulty of continuing the retreat is thereby increased, and the consequent losses become more serious; or else the main body is obliged to counter-march in order to disengage the rear guard, thus defeating its own object. It is only towards dusk, as a general rule, that a rear guard may engage in a serious combat without danger, because the enemy has not then time to make use of his superiority. It is, however, well to bear in mind that in our latitudes darkness does not come on all at once, and that an active enemy may do a good deal as long as there is light enough to aim. Artillery will therefore play an important, in fact the principal part, with rear guards as well as with advance guards. Its far-ranging and powerful fire is best suited to keep the enemy at a distance, which is the task of all rear guards, and the longer the guns remain in action the better they perform this duty. The risk thus incurred of losing some of them should not be regarded, and should never be considered a reason for limbering up prematurely. It will be wise to attach some batteries from the main body temporarily to the rear guard. The same considerations which regulate the relative position of troops of the different arms in advance and rear guards extend to the actual column of route. In rear of the cavalry comes a part of the artillery, that is to say, of the arm specially required to open an action, but the risk which may arise from the defeat of the cavalry and from the consequent penetration of the pursuing enemy into the column, to batteries, helpless as these would be in the line of march, has led to the custom of placing at least some infantry in advance of the guns. Of course all the artillery is not quite so far to the front, for in that case the

infantry which is behind it would arrive too late upon the battle-field. The corps artillery of one Army Corps which occupies above 7 kilometres ($4\frac{1}{2}$ English miles) of the column must not be wedged into an infantry division, because the infantry in rear of the guns would not reach the scene of action for $1\frac{1}{2}$ hours after that in front of them, and the Divisional Commander would have to do without half his force all this time. It is customary, therefore, to place the corps artillery between the two Divisions of the whole Army Corps in using one road.

Hitherto we have only had in view marches leading directly on the enemy, but we must now say something of those which pass across the front of his position or of his columns, such as are called flank marches. These have the credit of being dangerous and difficult enterprises. Military experience, however, teaches us that one may venture more in the way of flank marches than theory admits. Frederick the Great made a flank march at Prague round the right wing of the Austrians, and at Kolin all along their front. In those days it was difficult to move an army which had once taken up its fighting position, for it was not allowable to disturb the order of battle. There was, therefore, no great risk of counter-attacks on the part of the enemy, and the King, indeed, never had any dread of them. All is now changed. The separate portions of every army are now able to act independently, and can undertake with greater facility a counter-attack against any of the enemy's columns which may march across their front; but still even now, when a large body of troops has deployed, it is a matter of time to put it in movement in a direction not before contemplated. Before this can be done the right moment for action has very often passed by, or else the commander is at least doubtful whether it will not pass away before he can act, and therefore gives up the attempt. If the enemy does not undertake the flank march with his entire force, but leaves a part of it in position, we must take care lest, when making a counter-attack, we find ourselves between the two bodies, that on the march and that halted, thus getting into difficulties; and so we see flank marches in sight of the enemy succeed even at peace manœuvres.

The risk is greater if the enemy is already in movement while you are making the flank march, in which case it will be prudent to keep at a greater distance from the heads of his columns, or to occupy his attention by bringing into action simultaneously troops distinct from those making the flank march. When moving straight to the front it is, as a rule, of no consequence whether you encounter the enemy and have to form up a quarter of a mile (over an English mile) nearer or further off. When making a flank march, on the contrary, you always have a distinct end in view, which you would rather gain without any fighting or delay. Thus all interference on the part of the enemy is inconvenient. You watch him with a certain degree of anxiety, and you thus become impressed with the idea that you are attempting a difficult enterprise. Besides which it is only natural that we should think more of a danger which threatens flank and rear than of one towards which we are advancing. The soldier when on the line of march assumes that his leader knows the enemy to be directly in front of him. If, however, that enemy appears suddenly on a flank, then men in general are apt to become impressed with the notion that they are surprised, an idea which shakes their confidence. Flank marches which even the private soldier can see to be intended as such are made with ease. This is proved to be the case by the numerous marches for purposes of concentration made within the lines of investment round Metz and Paris in 1870-71. Those were really all flank marches made in presence of the enemy occupying the ground in rear of

and between the forts. But the situation was clear to all, and everyone knew that during the march attack was only to be feared from the side on which the fortress stood; hence the feeling of being in an extraordinary situation was dispelled, and the troops marched without apprehension along or close behind the line of investment towards the threatened point, the whole proceeding appearing to them quite natural, and no special precaution being ever taken on these occasions. Yet, to take an instance, at the time of the battle of Noisseville (September 1, 1870), the field works along the Prussian line were in many parts still very slight, and the position was in greater part only held by outposts, so that as large a force as possible might be available for field operations. An Army Corps on the march, if suddenly attacked in flank and obliged to show front to that flank, forms a fighting line three miles in length ($13\frac{1}{2}$ English miles), in which are various gaps more or less large, but you will hardly allow yourself to be so completely surprised as to be compelled to form to a flank on the actual road which you are following. There will always be time enough to gain a position on one side of the marching column, and in such a position you can form up more quickly than to the front, because the distances to be traversed are shorter. The tail of the column is, as we know, 24 kilometres (15 English miles) from the head, and the rearmost troops will only have 11 kilometres ($7\frac{1}{2}$ English miles) to march to a flank position about 3 kilometres (2 English miles) from the line of route, on the assumption that the extent of the position taken up is 4 kilometres (2½ English miles), that the troops marching at the tail of the column will only have to gain the nearest flank of the position, and that the latter is neither near the head nor tail of the column, either of which cases will be of rare occurrence. The situation will be less favorable when, owing to the nature of the ground, it is impossible for troops to form up to a flank from column of route, for instance, in a narrow mountain pass, but the very nature of the ground in such a case will generally protect the marching column from interruption, for the enemy will find no roads by which to move to the attack. According to the rules of art, troops when making a flank march should be covered by a corps specially detached for the purpose, behind which the movement will be made, but the very presence of such a corps will very often draw the enemy's attention at once to the operation. The said corps, moreover, can only be one of small strength, and it will thus invite attack from the very enemy whom you wish to keep at a distance. Whenever, therefore, the distance or the nature of the country are of themselves sufficient to give some security against attack, it will be better to dispense with the covering corps, and to content ourselves with keeping the enemy under careful observation by means of our cavalry. When a detachment is sent out as above supposed, it is often difficult to draw it in again safely, and the whole operation is therefore delayed. When, in 1866, Benedek made "his well-conceived" flank march from Moravia to the Upper Elbe, he placed the IInd Army Corps, which happened to be in advance, and the 2nd Cavalry Division in position fronting towards the country of Glatz, a measure which served to delay the whole operation. During the Napoleonic period it was held that a position taken up for battle should always be of great depth, which will seldom be the case if we have to repel an attack made on us whilst making a flank march, and are consequently forced to form up towards the flank, but in the present day we may dispense with depth of formation, as modern firearms give great power of resistance even to a thin line. The prejudice against flank marches should, then, be treated in the same way as that against night marches, that is to say, it should be overcome. When on

some future occasion two armies form up opposite to one another on the frontier and in close proximity, the possibility of a first success will depend on rapid concentration on one point, which can only be accomplished by means of bold and rapid flank marches. This will be specially the case when we find ourselves in front of a chain of barrier forts, between which the enemy has taken up his position. Of course some caution is necessary in making a flank march. It will be advisable to shorten the column of route by diminishing the intervals between the different units, and by marching on as large a front as possible. Naturally, too, baggage and trains should not follow in rear of the troops when crossing an enemy's front, but take parallel roads near the column on the side furthest from danger. One may often take advantage of night for flank marches which would otherwise have to be made in view of the enemy. If a whole army is engaged in the operation, attention must be paid to the possibility of deploying in some strength to a flank at need. This would be a case in which one would be evidently justified in making two Army Corps follow one another at as close intervals as possible on the road nearest to the enemy. Further formations seem unnecessary. When the IInd Prussian Army advanced into Bohemia at the end of June, 1866, the VIth Army Corps followed the Vth on the exposed left wing, which to a certain extent was making a flank march across the head of the enemy's columns then coming up, the two corps being, as is well known, temporarily united under the command of General v. Steinmetz.

Clausewitz says that the wearing effects of marching are so great that next to battle it is the operation the most productive of loss. This is doubtless accurate. Thousands of men will always be used up on the line of march even if every care be taken. Napoleon lost, when advancing into Russia in 1812, during the fifty-two days which it took him to do only 70 miles (315 English miles), nearly 100,000 men by sickness and straggling. Bad discipline had in great measure to account for this probably, but in any case his losses on this march would have been extraordinary. Even if the men who fall out do not die, they are at all events lost for the term of the campaign, filling up hospitals and etappe stations on the line of communication, and causing serious embarrassment.

Prince Frederick Charles ordered all his stragglers to be formed into companies, and to be used as garrison troops in rear of the army in 1870, which turned out to be a very judicious measure, as it enabled him to keep units in the front which he would otherwise have been forced to leave behind, and moreover the hard guard duty made those left behind anxious to rejoin their corps. Although an Army Corps may in special cases far exceed the ordinary distance of a day's march, namely, the length of its own column of route, a General should always carefully consider whether the gain arising from such an effort is sufficient to counterbalance the probable loss occasioned by it. A forced march must, from its material effects, be considered equal to a defeat if the enemy after all eludes you, as will happen, for instance, on eastern theatres* of war, and its after-effect morally is likely to be unsatisfactory, for you will have the consciousness of having made a great expenditure all for nothing.

The journeys of troops play their part now, as well as marches. In the olden times one only heard of sea transport for troops. Napoleon, however, to whom nothing was impossible, forwarded his Guards in 1805 and 1806, and the troops brought up from Spain in 1814, to the scene of operations in carriages. They thus got over on an average ten miles (45 English miles)

* By eastern the author means Russian. — L. G.

daily. Now-a-days, as we have seen, millions of men journey to the frontier by rail when the armies are being concentrated. After war has actually commenced, transport of troops by rail on a large scale meets with serious difficulties, the lines being taken up with goods of all kinds, and the railway staff being reduced by mobilization. Moreover, a certain amount of lassitude creeps in after the extraordinary exertions made during the period of concentration. The rolling stock is dispersed. The approach of the enemy causes disquiet, and results are not unlikely to fall short of expectation. It is easier to bring up reinforcements from provinces which are not exposed to attack than to transport troops immediately in rear of or along the front line. As, however, considering the speed of railway transport, roundabout roads will not be of much service for concentration, we must be prepared for the sudden and direct transfer of large masses from one point to another on the line. The army on the defensive, being at home, has a great advantage in this respect. During the campaign on the Loire in 1870, 28,000 infantry of the French 15th Army Corps were conveyed from Salvois in the Sologne by Vierzon and Tours to Mer, near Blois, and to Vendôme, being thus transferred from the left to the right bank of the Loire, between 7 A.M. October 27th and 9-20 P.M. October 28th, without its being noticed by the Germans. 16 batteries, 2 regiments of cavalry, ammunition columns, &c., followed the infantry during the latter night up to 8 A.M. on the 29th. In November of the same year, 40,000 men of the three arms, under General Crouzat, travelled in eighty-eight trains from Besancon on the Doubs, to Gien on the Loire, in three days, this latter movement only becoming known to the Germans after its completion. From time to time during the campaign on the Loire, French military trains travelled at only ten minutes' interval. On the other hand, the attempt to transfer Bourbaki's Army with extraordinary rapidity from the Upper Loire into the valley of the Doubs, at the end of December, 1870, failed, owing to defective preparations and to want of unity in command. Two Army Corps and the general reserve, consisting of one Division, took three days to unload, and altogether ten days to complete their journey, which it was hoped to accomplish in half the time. An Army Corps, which followed the army later on, took from the 4th to the 16th January to get from Nevers to the Upper Doubs, near Belfort, because it found the line blocked by the unusual accumulation of trains conveying troops, material, and supplies.

It would have been better to have moved part of the army by road than to depend entirely upon rail transport, particularly in the case of the single line on the Upper Doubs, the smallness of the stations on which made detraining a long business, and the expeditious establishment of a second line of rails and of sidings was impossible owing to the small amount of space between the river and the hill-side. The invader will find it even more difficult during operations in the enemy's country to shift large bodies of troops from point to point along his front, although he will naturally deem it advisable to repair the lines occupied by him, and to make use of them. We may mention, by the way, as examples of the use of railways in an enemy's country, the following occasions in 1870-71, when the Germans took advantage of the French lines. The 14th Infantry Division, whilst besieging the fortresses on the northern frontier, was conveyed, between the 7th and 14th January, 1871, from thence by rail to Chatillon-sur-Seine, the combatant portion being assembled at that place on the last-named day. Trains and columns followed. After the fall of Strasbourg, the Landwehr of the Guard Division was transported to Paris, beginning its entrainment on 7th October, and arriving by instalments at Nanteuil between the 10th and 19th. It was obliged to use the main line by Frouard, which was already in great request. In the same way, the 11th

Army Corps was forwarded from Metz to Paris. The 3rd Infantry Division, consisting of 10 battalions, 1 squadron, 4 batteries, 1 pioneer company, 2 hospital detachments, 1 field oven column, 1 field hospital, 1 supply column, altogether 120 wagons, did the journey in twenty-four trains between the 3rd and 8th November. The 4th Infantry Division had already commenced its entrainment at Pont-a-Mousson on the 26th October at midday, the whole of its combatants, together with field hospital and the necessary columns, being assembled at Longjumeau by the 6th November. A part of the corps marched by road to Paris. As a general rule, the railways will do little for an invader but bring up from the rear necessary supplies, ammunition, and drafts of men. The advantage to be gained by using the rail instead of marching is evident from the fact that while we reckon the ordinary rate of marching at three miles (13½ English miles) in the twenty-four hours, we may count upon doing 90 miles (405 English miles) in the same time at a moderate speed. The trial to the troops will, however, be somewhat greater owing to the loss of their night's rest. At the same time we must remember that troops are able to make a moderate march at the end of their journey, and will indeed generally be very glad to do so after sitting still for so long. The difficulty of transporting large bodies of troops by rail consists more in entrainment and detrainment than in the actual conveyance from place to place. When there is only a single line of rails blocks must frequently occur, so that in such cases you must reckon upon less work being done, and upon a greater degree of uncertainty in traffic than when there is a double line. The greatest number of trains to be counted upon daily on a single line is generally found to be twelve, whereas the number may be put at eighteen on a double line. Colonel Blume, however, after the experience of the war of 1870-71, considers it advisable to reduce the estimate to eight and twelve respectively.

This is certainly well within the mark, for it only equals what the French accomplished in 1870—71 on the occasions which gave rise to so much complaint as to slowness of movement. Whenever circumstances render it in any way practicable, transport by rail should be preferred to the route march, for casualties inseparable from the latter are inevitable, but a careful calculation should always be made as to which mode of transport is the quicker. You require on an average eleven days to despatch an Army Corps complete on a railroad with one line, and seven days to do the same on a double line. The same corps can march 30 miles (135 English miles) in eleven days, 20 miles (90 English miles) in seven days.

It is only when the railroad extends to a greater distance that there is any saving of time in using it for a whole Army Corps, but it is very often only of consequence to convey part of the force expeditiously to a certain point, so you send that by rail, and the remainder of it follows on foot. It is often a good plan to combine the two modes of transport, conveying the infantry by rail, and sending cavalry, artillery, trains and columns, by road, making longer marches than usual. Some guns and cavalry may be sent with the infantry, with a view to immediate employment on arriving at the end of the journey; in the same way, a small force of infantry may be despatched with the troops which march by road. The extraordinary services which railways render in provisioning and supplying an army, as well as for transporting the combatants, will always render it advisable for an invader to get the full use of them as soon as possible, therefore he will carry on the repair of railways which have been destroyed as his army advances. The construction of provisional supplementary lines, like that made in 1870 from Rémilly to Pont-à-Mousson so as to turn Metz, will in future be undertaken on a larger scale than heretofore. Railways are now-a-days indispensable for siege operations, as a modern siege train can

hardly be transported to any distance by road. Not to mention the weight of the guns, the mass of material required is so great that 20,000 horses, and as many men, would be required to convey a siege train without interruption to a distance of 20 miles (90 English miles). From 350 to 400 tons of ammunition are now fired away daily before a large fortress. The use of railways is therefore now a *sine qua non*, for by no other means could such weights be transported to such a distance daily for any length of time.

The following figures give some useful hints as to the employment of railways in war. A train may convey one battalion, or something over one squadron (so that one may reckon three trains to a cavalry regiment of four squadrons), or one battery, or one supply column, &c. An Army Corps with its belongings requires 90 trains. An infantry division without baggage requires 20 trains. A cavalry division also without baggage requires the same number. From these data it is easy to calculate how many days any particular body of troops will require for despatch. An Army Corps will need, as already shown, 11 or $7\frac{1}{2}$ days, according to whether there be one or two lines of rail. Under similar conditions a cavalry or infantry Division will require $2\frac{1}{2}$ or $1\frac{1}{2}$ days. Now as a troop train does, as a general rule, at the outside four miles (17 English miles) in an hour, the length of time required to convey the various units to a distance of 100 miles (450 English miles) will be as follows:—

An Army Corps on one line of rail.....	12 days.
" " on a double line.....	$8\frac{1}{2}$ "
The advance guard of an Army Corps...	$2\frac{1}{2}$ or 2 days.
An infantry or cavalry division.....	$3\frac{1}{2}$ or $2\frac{1}{2}$ "

As, however, the examples already cited from the Franco-German War show, the rate of travelling may at times be greatly increased.

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MEDALS AND HONORARY DISTINCTIONS GRANTED UNDER THE ORDERS OF THE GOVERNMENT OF INDIA.

By BRIGADIER-GENERAL SIR F. B. NORMAN, K.C.B.

WAR WITH MYSORE, 1780-1784.

Continued from page 171, No. 60, Vol. XIII.

On the 18th March, 1778, war was declared in London against France. The Secret Committee of the Court of Directors immediately despatched news of the same to the Governor-General *via* Cairo, and desired that prompt measures might be taken for the capture of the French settlements in India. This despatch reached Calcutta on the 7th July, and on the same day Warren Hastings wrote to the Governor of Fort St. George directing him to arrange for the siege of Pondicherry, and set an example by taking possession of Chandernagore on the 10th. He also empowered the Governor of Fort St. George to enter into a treaty of friendship with Hyder Ali, who, it was said, had made overtures with that object, the Governor-General considering that such a treaty would at all events divert him from making engagements with the French. He ordered the army in Bengal to be augmented by four battalions of native artillery men and nine battalions of native infantry, and volunteers were obtained from the European regiment for two companies of artillery. The Calcutta militia was embodied to the number of one thousand men. The defences of the river were put into an efficient condition, and three months supplies stored in Fort William. The squadron under command of Commodore Sir Edward Vernon being very weak, one of the company's ships and another, which had been purchased for this purpose, were equipped and manned as ships of war, and sailed within the month to join the Commodore.

Intelligence that war between Great Britain and France was imminent had reached Madras in June, and on the 29th of that month orders were issued for assembling a force at Conjeeveram. Immediately after receiving the Governor-General's instructions the Government of Madras directed Major-General Sir Hector Munro to assume command of this force, and active arrangements for prosecuting the siege of Pondicherry were commenced. On the 8th August Munro encamped within four miles of Pondicherry,* and the next day summoned the place to surrender. The summons was treated with scorn. The following day, the 10th, a hotly-contested action was fought in the roads between the British and French squadrons, which ended by the French returning to Pondicherry. On the 20th the French fleet was again seen standing out of port. Sir Edward Vernon advanced to meet it, but the French commander, taking advantage of night, avoided an engagement and sailed away, leaving Pondicherry to its fate. Munro now prosecuted the siege with vigour. The garrison under M. de Bellecombe made a gallant and skillful defence, and were greatly aided by the heavy rain, which retarded the operations of the besiegers, so that it was not until the 15th October that a passage across the ditch had been made. Then only did the Governor think of surrendering. Favorable terms were offered, and the garrison became prisoners of war, but the colors of the battalion of India were restored to it by the victors in token of their admiration of the distinguished conduct of that corps. The defence had been stubborn, and the casualties in Munro's army amounted to 906, including 84 officers.†

Karikal had already fallen into the hands of the British, and Mahé was now the only settlement remaining to the French. It was determined to get possession of it also. Hyder Ali remonstrated, declaring he considered the place as his own, and that the French were occupying it under him. His remonstrance was disregarded; and Colonel Braithwaite, with two battalions of the European regiments, three battalions of native infantry, and two companies of artillery, was ordered to proceed against Mahé. He arrived before that place early in March; and on the 19th it surrendered. It had been intended that, after the reduction of Mahé, Braithwaite with the greater part of his force should have joined Goddard in Gujarat, but owing to complications with the Nairs this intention had to be abandoned. On the 29th November Mahé was blown up, and the force moved to Tellicherry, which was threatened by the Nairs.

* Pondicherry was founded by Francois Martin in 1674. In 1693 it was taken by the Dutch, but restored in 1697 by the treaty of Ryswick. It was unsuccessfully besieged by Admiral Boscawen in 1748. Besieged and taken by Colonel, afterwards General, Sir Eyres Coote in 1761 and restored by the peace of Paris in 1763. Besieged and captured by Sir Hector Munro in 1778 and restored by the peace of 1783. It was taken by Colonel Braithwaite in 1793 and not restored until 1815.

† In April, 1779, the General Court of Proprietors unanimously passed a vote of thanks to the Secret Committee for the prompt manner in which they had issued orders for operations against the French settlements, and further presented the members of the Committee with eight hundred guineas for the purchase of plate. Thanks were also voted to Sir Hector Munro and Sir Edward Vernon, to each of whom was presented a sword set with diamonds valued at seven hundred and fifty guineas.

Hyder was greatly exasperated at the capture of Mahé, as it was through this settlement that he had been in the habit of getting his recruits and supplies from France. Whilst he was in this state of exasperation he heard that Lieutenant-Colonel Harper had been sent to occupy the Guntur Circar and that he purposed marching thither through Mysore territory. Hyder openly declared that he would not allow the English to occupy Guntur, and directed his officers to oppose Harper's advance. Harper was permitted to continue his march until he had entered a narrow winding defile between two precipitous hills; suddenly he came upon a breastwork lined with troops; large bodies of men were now seen on the hills on either side, and a heavy body of troops was drawn up in rear of the breastwork. Harper at once determined to retrace his steps, which he succeeded in doing without becoming involved in serious hostilities.

It also happened that just at this time an envoy arrived from the court of Poona soliciting him to join the confederacy which had been formed to drive the English out of India. Hyder readily agreed to the proposal, and promised to put forth the whole of his strength for this purpose. In February, 1780, Sir Thomas Rumbold, the Governor of Madras, sent Mr. Gray to Seringapatam to offer an alliance with Mysore. Mr. Gray was treated with indignity and the proffered alliance contemptuously declined. Mr. Gray returned to Madras on the 30th March. On the 6th of the following month Sir Thomas Rumbold sailed for England, having in a Minute, dated the 3rd, recorded that all was tranquil and no immediate interruption to the calm was to be apprehended.

Mr. Whitehill was now Governor of Madras. He, too, saw no cause for alarm. That war was imminent was patent to all except the Governor and the majority of his Council. Muhammad Ali, the Nawab of the Carnatic, in vain informed the Government of Hyder's warlike preparations; his advice and intelligence were alike unheeded. In the middle of June Lieutenant-Colonel Lang, who commanded at Vellore, received certain information that Hyder had marched from his capital. Lang promptly sent this intelligence to Madras; his letter was received on the 19th. It was treated in the lightest manner, and he was informed "that he saw danger at too great a distance." No preparations whatever were made to meet the coming storm save that the detachment, formerly commanded by Harper, but now under Lieutenant-Colonel Baillie, was directed to recross the Kistna. Even on the 17th July, when Hyder was actually advancing to invade the Carnatic, the Commander-in-Chief declared that all apprehension was groundless.

Hyder laughed at the supineness of the English, and in a paper of intelligence from his army, delivered to the Madras Government on the 26th July by Muhammad Ali, he is reported to have said, speaking of the English: "I have tried them already, and I know them well; they have no conduct; and even now, when I have assembled my whole force to enter their country, they have not shown the least glimmering of light." On his part every preparation had been made.

with the greatest care. He moved from his capital in the month of June with an army estimated at close upon 90,000 horse and foot, besides 2,000 rocket men and 5,000 unarmed pioneers. He had a powerful artillery, and a large proportion of his troops had been trained by French officers; he moreover had a body of French troops in his pay. His commissariat was admirably organised by a Brahmin, named Poornea, one of his ministers of finance.

Having completed his arrangements, Hyder ordered prayers to be offered up in all the mosques and the Hindoos to perform their ceremonies for the attainment of success. Moving slowly to the frontier he sent forward emissaries to bring over the officers Muhammad Ali had placed in command of his more advanced posts. But the corps of spies whom he had sent to obtain employment as guides to the English had not yet been taken into pay by them, as no military operations had been determined on; "there was no plan to divulge, no projects to frustrate, no movement to anticipate."

On the 20th July, 1780, Hyder entered the Carnatic through the Chengamah pass, and from thence his progress was marked by the blaze of towns and villages. Round every place he had determined should fall to his arms, he drew a wide circle within which all the towns and villages were doomed to destruction; and he directed the indiscriminate mutilation of all human beings who hesitated to obey the order for instant emigration, accompanied by their flocks and herds. From Chengamah Hyder detached a select corps of 5,000 horse to plunder Porto-Novo, a seaport some fifty miles south of Pondicherry, whilst other troops were sent to carry out the work of desolation before described.

Black clouds of smoke were to be seen in every direction from St. Thomas' Mount, distant only nine miles from Madras, before an order for the movement of a single soldier was given. The corps under Colonel Baillie was ordered to march to Conjeeveram, and Braithwaite, who was at Pondicherry, directed to march with the troops at that place to Madras. Lieutenant-Colonel Cosby was sent from Madras to the eastward to collect all the disposable force south of the Koleroon, with which he was to act on the enemy's communications through the passes.

Owing to dissensions in the Council the presence of the Commander-in-Chief at Madras was necessary to secure a majority for the Governor. It was, therefore, decided that the command of the army in the field should be entrusted to Lord Macleod, who had recently arrived from England in command of the 73rd Highlanders.* Macleod was ordered

* John Lord Macleod, eldest son of George III, Earl of Cromartie, who joined the rising in 1745, after the battle of Falkirk and the retreat of the Highlanders to the north, the Earl, with his son Lord Macleod, was surprised and taken by a party of Lord Sutherland's militia at Dunrobin Castle on the 15th April, 1746. They were sent prisoners to Inverness and from thence to London; the Earl was tried by his peers, found guilty of high treason, and sentenced to death, and his estates and honors forfeited to the Crown. The sentence of death, however, was remitted. Lord Macleod on account of his youth received an unconditional pardon, and shortly after went abroad in quest of military

to assemble the army at Conjeeveram, an open town forty miles in advance of Madras, and the country round it in all directions occupied by the enemy. He protested against this order, urging the vicinity of Madras as the only safe point of assembly until the army should be in sufficient force, by the junction of all its detachments, to meet the enemy in the field. He positively refused to assume the command of the army in its then badly-equipped state, but at the same time offered to march at once at the head of his own regiment. "I," said his lordship, "have been a great many years in the service, and I have always observed that when you despise your enemy he generally gives you a *d—d* rap over the knuckles." The Commander-in-Chief refused to alter his plans, and pledged himself to carry out the junction of the detachments as originally proposed. He accordingly assumed command of the army, a majority in Council having been secured by the appointment of an additional member, a measure against which the opposition protested as illegal.

Lieutenant-Colonel Baillie had been ordered to march by a route which would have taken him through a country overrun by Hyder's troops. He, however, took upon himself to move by another route, and on the 24th August arrived within two easy marches of Munro. The strength of Baillie's detachment was 207 Europeans and 2,606 sepoy, with six 6-pounders and four 3-pounders. The main army under Sir Hector Munro consisted of the 73rd Highlanders, one battalion of the Madras European regiment and the Grenadiers of another, five battalions of sepoy, a company of sepoy marksmen and two troops of cavalry, the total strength being 5,209, and it had thirty-four pieces of field artillery, four heavy guns and five mortars. Instead of allowing Baillie to join him Munro directed that he should pursue an independent route of upwards of fifty miles to Conjeeveram, "a measure," says Wilks, "inexplicable by any conjecture excepting that of attempting to justify an erroneous opinion."

employment. He sojourned for some time at Berlin with Field Marshal Keith, and through his interest obtained a commission in the Swedish army. After serving in this service for twenty-seven years he attained the rank of Lieutenant-General. He returned to England in 1777, and was presented to George III, who received him graciously. At the suggestion of Colonel Duff of Muirtown, who had served in Keith's Highlanders, and encouraged by the reception he had met with in the north, he offered to raise a regiment. The offer was accepted, and so great was the influence of his name that 840 Highlanders were enlisted and marched to Elgin in a very short time. In addition to these 236 Lowlanders were enlisted by Captains the Honorable John Lindsay, David Baird, James Fowles, and other officers, besides 34 English and Irish who were enlisted at Glasgow, making in all 1,110 men. The corps was embodied at Elgin and inspected there by General Skene in 1778. Very shortly after a second battalion of the same strength was raised by Lord Macleod's brother, Lieutenant-Colonel the Honorable George Mackenzie. The first battalion under Lord Macleod embarked for India in January, 1779, and having on the passage reduced some French settlements landed at Madras in January, 1781, mustering nearly one thousand men and clothed in Highland uniform. In 1786 the regiment was numbered the 71st Highlanders; in 1708 the 71st Glasgow Highlanders; in the following year the 71st Glasgow Highland Light Infantry; in 1810 the 71st Highland Light Infantry; and is now known as the 1st Battalion Highland Light Infantry.

In the meanwhile Hyder had advanced to Arcot, which he invested on the 21st August. Munro determined to relieve that place, and accordingly marched from the neighbourhood of Madras on the 26th. Hyder, on hearing of the march of Munro, broke up his camp on the 29th, having previously despatched his son Tippoo with a picked body of 5,000 infantry, 6,000 cavalry, twelve light guns and a large body of irregulars to intercept Baillie. Munro reached the neighbourhood of Conjeeveram on the 29th. He had started with only eight days' provisions, and now found that the four days' supply which remained would be little more than enough for two days after he had been joined by Baillie. The official, who had been sent by Muhammad Ali to accompany the army, when requested by Munro to aid in getting supplies, replied that he had been ordered to attend him, but had no authority to procure either provisions or intelligence. Munro was thus compelled on the fourth day of the campaign to collect such supplies of food as could be found in the large but ruined town of Conjeeveram, and the small supply he was able to collect he deposited in the Hindoo temple, a spacious building capable of being speedily made defensible against a *coup de main*.

On the 25th, Baillie reached the river Kortelar, then nearly dry, but liable to be swollen by the mountain rains. He unfortunately encamped on the northern instead of the southern bank. On the night of the 25th floods of water came down from the hills, and he was prevented crossing until the 4th September. Tippoo was close at hand, but neither on that nor the following day did he do more than harass Baillie's line of march. On the morning of the 6th, however, he prepared to attack Baillie, who took up a position near Perambakum, distant fourteen miles from where Munro was encamped. The action which ensued is described in a note from Baillie to Munro as having lasted from eleven till two, near 100 Europeans and sepoys were killed and wounded by the guns of the enemy, who never came near enough for musketry. The same evening he wrote to Munro, saying that on a review of his troops, after the action, he found that it was not in his power to join the main army, but that he hoped to see the General at Perambakum. It subsequently transpired that Tippoo's troops had suffered much more severely in the cannonade, and he wrote to his father saying that he could make no impression upon Baillie, and asking for reinforcements.

During this day Hyder, who was encamped about six miles to the west of Munro, made a feint of turning his right in view to covering the operations against Baillie. This led to a change of position on the part of the British army, which now fronted the north on the road by which Baillie was expected. The two armies remained throughout the day drawn up in order of battle at a distance of two miles from one another. At noon heavy firing was heard, which made it evident that Baillie had been attacked and that Hyder had interposed his army between the two British forces. Either, therefore, Baillie's detachment would have to fight its way unaided, first through Tippoo's force and then through the main body under Hyder, or an effort must be made for his relief. Munro, however, did not consider the temple, which now, in

addition to the supplies of the army, contained also the sick, heavy guns, and most of the baggage, sufficiently strong to hold out for even a single day, and therefore decided that he was unable to move from its immediate neighbourhood. He remained quiet in camp on the 6th, 7th and 8th without making an effort to assist Baillie. On the evening of the 8th he received Baillie's note written on the evening of the 6th, still apprehensive that, if he marched to Baillie's aid, Hyder would attack the temple in his absence, and, as the subsistence of the army depended on this magazine, its capture would have completely answered Hyder's purpose, as it would have compelled the army to return to Madras. In this state of doubt Munro assembled a council of war, and it was decided to send a detachment under Lieutenant-Colonel Fletcher to Baillie's assistance. It was composed of the flank companies of the 73rd Highlanders, two companies of Grenadiers of the European regiment, a company of sepoy marksmen and ten companies of sepoy Grenadiers; it numbered all told 1,007 men. Fletcher was directed not to attempt anything against the enemy on the road, and to inform Baillie that, after he had given the troops a few hours rest, he was to move towards Conjeeveram, and that Munro would meet him half way.

The detachment moved out of camp at 9 o'clock that night, a battalion of sepoys having been ordered to keep up a brisk fire in the enemy's outposts to distract their attention, resisting the temptation to attack some parties of the enemy whom he passed whilst they were asleep, and changing his route during the march so as to deceive his guides, who were in Hyder's pay. When day broke Fletcher found himself within two miles of Baillie's camp. To strengthen his position Baillie had cut the bank of a large tank, and had inundated a considerable portion of the country in his rear; wading through this water the detachment reached the camp at 7 o'clock. The arrival of this reinforcement brought the force under Baillie up to 3,720 fighting men.

Hyder was much incensed with his light troops for having permitted Fletcher to pass unobserved. He was, moreover, perplexed as to the object intended by the junction of this detachment with Baillie. Lally and other French officers, who were in his service, were of opinion that it was part of a plan by which Hyder was to be placed between the two forces and attacked on the night of the 9th, and urged him to retire. Hyder, however, decided to maintain his ground, but ordered roads to be prepared so that he might retire to the westward in the event of the conjectures of the French officers being realised. The day of the 9th having passed without Baillie or Munro having moved, and Hyder's spies having told him that the latter was not preparing to move, immediately it was dark he sent off nearly all his infantry and guns in the direction of Baillie, he himself remaining on the ground with all his cavalry and a few light guns, ready alike to retire should his camp be attacked or to harass Munro should he move to Baillie's assistance. At 4 A.M., finding all quiet in Munro's camp, he followed his infantry.

The men of Fletcher's detachment were so much knocked up by their march that it was necessary to give them a longer rest than had been anticipated, and it was 8 o'clock in the evening before Baillie commenced his march for Conjeeveram. His troops were disposed as follows: The regiments which had been engaged on the 6th were in the centre, Fletcher's Europeans were on the flanks, and eight field pieces were distributed along the line; the baggage, followers, and a large supply of cattle for the army was on the left flank guarded by a battalion of sepoys. A battalion of sepoys and two guns formed the rear, and the company of sepoy marksmen the advance guard.

Almost immediately after moving off the advance guard was challenged by the enemy's vedettes; unfortunately no orders had been given not to fire, and the challenge was replied to by a volley. Tippoo's cavalry and rocket men quickly turned out, and the latter, although the flanking parties did their best to keep them at a distance, greatly harassed the line with their rockets. The road, however, being good and the moon bright, the troops marched on at a brisk pace, and after proceeding about six miles entered an avenue of banyan trees on the direct road to Conjeeveram. A large body of horse was now observed approaching from the left rear as if to fall on the baggage. The rear guard was, therefore, halted and prepared to receive the enemy, and the baggage was ordered to the right. This change having been effected the rear guard moved on. In the meanwhile, however, the main body had been advancing, and there was a considerable interval between it and the rear guard. Taking advantage of this the enemy's cavalry threw themselves into the gap. The rear guard again halted, and the officer in command sent to Baillie for aid. At this time the head of the column found itself entangled in Tippoo's camp, and shortly after fire was opened on the centre of the British force from two guns on the left of the avenue. Captain Rumley with five companies of sepoys was sent to seize these guns, but they were found posted behind an embankment with a deep watercourse in its front, and the sepoys retired in some confusion. The British guns now replied to those of the enemy, which they soon silenced, and Baillie, facing the main body about, extricated the rear guard.

Baillie now determined to halt until daybreak; according to Wilks he formed this resolution contrary to the advice of Fletcher, but it is only fair to state the reasons which induced him to halt as given by another writer. John Lindsay* in his narrative says: "Baillie, having found that he had suffered considerably, determined to halt until daybreak for the following reasons: The troops were exceedingly fatigued, his numerous train of baggage and camp followers was in the utmost consternation, and he had a very large supply of provisions for the grand army which he ran the greatest risk of losing, as he was unacquainted with the position of the enemy and likewise with the nature of the ground he was to march over; these

* Lives of the Lindsays, Vol. III, p. 243. Captain the Hon. James Lindsay commanded the Grenadiers of the 73rd Highlanders in this action.

reasons determined him to wait until the day broke, that he might see his enemy and take his steps accordingly.

For the remainder of the night perfect silence reigned on both sides. At half past six, on the morning of the 10th, the army resumed its march, and emerging from the avenue entered a large plain. A village was seen distant about three-quarters of a mile to the front, but no enemy was visible. Nearly half the force had entered the plain when, all of a sudden, a heavy fire of grape and round shot was opened upon it. For a short time the column marched on, but the fire of the guns continuing with unslackening severity, and doing great execution, Baillie halted, formed line, and commenced a cannonade. The British guns soon gained the ascendancy, and ten companies of sepoy Grenadiers under Captains Rumley and Gowdie were ordered to take the enemy's guns. The sepoys advanced rapidly, and in much disorder, but before they had got within one hundred yards of the guns they were abandoned. Just at this moment a body of horse, which had charged the head of the column and been repulsed, reformed and made a feint of penetrating between the Grenadiers and the line. A panic seized the sepoys, and in great disorder they strove to gain the line. The cavalry charged in amongst them and cut up the greater number, and shortly after the guns reopened with increased vivacity.

Baillie now posted his troops in a deep watercourse, and having ordered the infantry to lie down commenced a cannonade, which was maintained for an hour, when the enemy quitted their guns. As Tippoo's cavalry was hovering about, Baillie did not deem it prudent to attempt to seize them, and decided to halt where he was until joined by Munro, who was momentarily expected. Suddenly, a report was spread that Munro was at hand, and almost immediately afterwards infantry clad in red and guns drawn by bullocks were seen moving out of the village. To the surprise of all it was noticed that they were preceded by a body of cavalry, which, in a few minutes, covered the plain, and it then became clear that Hyder with his whole army had given Munro the slip. In a brief space of time Baillie's force was surrounded, and Tippoo was again in possession of his guns, which, together with fifty brought by Hyder, opened a furious fire on the British troops. So closely had the enemy surrounded the detachment, and so vast were their numbers, that it is said their guns did as much execution amongst their own troops as they did to Baillie's. The British guns maintained a brisk fire until, two of their tumbrils having been blown up, their ammunition was exhausted. The enemy now drew nearer, and the rear guard being hard pressed, Fletcher ordered the Grenadiers of the 73rd to move to its support. When the Grenadiers rose to obey this order the sepoys, who up to this time had behaved steadily, rose to and moved to the rear. Seeing this the Mysore horse, thinking all opposition at an end, dashed at the centre, but the Europeans who were there rising up presented so steady a front that they stopped short.

Baillie, seeing no hope of relief, and desirous of saving the lives of the brave men who remained, fastened his handkerchief on his sword and demanded quarter.

It was refused. The British troops now prepared to deliver their fire and sell their lives dearly, but the commandant of the enemy's cavalry, advancing from his men, declared that quarter would be given if the troops would lay down their arms. Upon receiving this assurance Baillie ordered his men to ground arms. The Mysore cavalry, as soon as they saw that the order had been complied with, galloped forward, and the European soldiers impelled by rage and despair seized their arms, and poured a volley into the multitude that surrounded them. The horsemen, who, it was said, were drunk with bhung, furious at the slaughter made in their ranks, rushed on, and in a few minutes all in the centre of the detachments were cut to pieces. Hyder, exasperated at having purchased his victory with the loss of more men than he had overcome,* gave orders that no quarter should be given. His followers were only too eager to gratify their cruel passions, and if it had not been for the humane interposition of the French officers, more particularly of Messieurs Lally and Pimorin, not a man would have escaped.† Of eighty-six British officers thirty-six were killed or died of their wounds, thirty-four were wounded‡ and taken prisoners, and the remainder fell into the enemy's hands unhurt. The loss of the European rank and file was in the same proportion, and of the sepoys two thousand are said to have been killed.

To return to Munro. At daylight on the 10th, when he discovered that Hyder had departed, he moved off in the direction of Perambakum. After marching about four miles he halted and fired three signal guns, and seeing the smoke of the action he moved to his left in a direct line towards it. When he had gone a mile and a half he again halted and fired three more guns, but the signal was not replied to. Shortly after a great cloud of smoke, supposed to have been caused by the explosion of the tumbrils, was observed and the sound of firing ceased. "But," observes Wilks, quoting from a *M. S.* journal, "a considerable period intervened between the explosion of the tumbrils and the massacre, and, assuming that the measurements given in the journal were correct, Munro could only have been two miles off at the time of the ultimate disaster." In his official report Munro says that, when the firing ceased, he moved to the right to the Tripassoor road, and shortly after towards

* It was computed that seven thousand of his troops were slain. See life of Sir Thomas Munro, Vol. 1, p. 25.

† Captain the Hon John Lindsay, who commanded the Grenadier Company of the Highlanders, was saved by three French Hussars, who kept off the men who were trying to cut him down, although he was badly wounded. They took him to their commander M. Lally, who had his wounds bound up, put him on his elephant, and sent him to the camp, which was ten miles distant. On his arrival one of the Hussars who had saved him gave him some soup and a clean shirt. The next day the French officers told Lindsay that Hyder had ordered them to give up all their prisoners. They expressed great sorrow at this, but declared that Hyder would inflict condign punishment on them if they refused.

‡ Baillie was among the wounded. He was treated with the greatest indignity by Hyder and kept in irons. He died in captivity on the 13th November, 1782, after a long illness, during the whole of which he was not allowed the slightest comfort nor the advice of a physician.

Conjeeveram, in the expectation of joining Baillie, but meeting a wounded sepoy, who told him of the destruction of the force, he considered it necessary for the safety of the army that he should return to Conjeeveram, where he arrived at 6 o'clock. On taking stock of the supplies, which had so long bound him to the spot, he found that there was barely sufficient left for one day's consumption, and that if he remained the army must starve. After throwing his heavy guns into a tank he commenced his march for Chingleput at 3 A.M. the following day. The march was commenced in confusion,* and for the greater part of the way the force was harassed by the enemy's cavalry, and it was not until 9 A.M. on the 12th that the rear guard reached Chingleput. Nearly all the baggage and stores had either been captured or abandoned, and two hundred of the Highlanders had dropped down from the fatigue of a march of thirty miles on a sultry day rendered still more intolerable by the heat and smoke of the villages, to which the enemy had set fire, and through which the army had to pass.

It will be remembered that Lieutenant-Colonel Cosby had been sent from Madras to collect all the disposable force south of the Koleroon. With a few attendants and at considerable risk he reached Tanjore, and from that garrison, from Trichinopoly and the Tinnevely country he collected two regiments of the Nawab's cavalry, two thousand sepoys and six light guns, and having with great difficulty succeeded in recrossing the rivers Koleroon and Kaveri, which were in flood, he marched to join Munro at Conjeeveram. His orders being discretionary, he attempted to carry the fort of Chittapet by assault, but through the treachery of one of the Nawab's subadars the garrison were on the alert, and he was beaten back with the loss of two European officers killed and a number of sepoys killed and wounded. After a rest of a few hours he marched for Wandiwash, which was held by Lieutenant Flint. Here, on the 10th, heavy firing was heard in the direction of Conjeeveram, forty miles distant. As soon as it was dark Cosby marched to join Munro, and, knowing that his movements were carefully watched, as a blind to the enemy he left his tents standing on the glacis. When within ten miles of Conjeeveram he met a large body of the enemy's cavalry, who were on the look-out for him, and flushed with victory imagined he would fall an easy prey. Just at this moment he learnt from a wounded sepoy, who had escaped the massacre, of the destruction of Baillie's detachment. Concealing this information, he counter-marched his column, and giving out that he had received orders to go to Chingleput for supplies marched in that direction, closely followed by the enemy, but so excellent were his dispositions that he reached the ford of the river, about a mile from Chingleput, with but little loss. When he was about three miles from that place he was seen from a look-out which had been established by Munro

* Lord Macleod was not aroused from sleep until two hours after the army had marched off. His baggage together with all his papers fell into the hands of the enemy. Amongst his papers was a plan for the conquest of Mysore. See *Life of Sir Thomas Munro*, Vol. I, p. 25.

on the top of a high building. At first the detachment was taken for a party of Hyder's regular troops, but ultimately, by means of glasses, it was discovered to be Cosby's detachment. Munro then ordered some troops to cover his crossing the river, but before they arrived the enemy, thinking further efforts useless, had retired.*

Munro, having collected two days' food from the villages in the neighbourhood, and after depositing his sick in the fort of Chingleput, marched for St. Thomas' Mount, which he reached at 2 P.M. on the 14th September, and the following day retired to a more secure position at Marmelony, "thus," says Wilks, "terminating a campaign of twenty-one days, of which, even at this distance of time, every recollection is associated with sorrow."

News of the annihilation of Baillie's detachment reached Calcutta on the 23rd September, 1780, and the Governor-General at once determined that no effort should be spared to re-establish the power of the Company on the coast. At a meeting of the Council held on the 25th he moved that a detachment of European infantry and artillery should at once be sent to Madras, and proposed to Lieutenant-General Sir Eyre Coote† that he should take upon himself the task of retrieving the honor and authority of the British arms. Coote readily accepted the offer, and on the 18th October sailed from Calcutta with three hundred men of the Bengal European regiment, two strong companies of European artillery, six hundred and thirty gun lascars, and between forty and fifty gentlemen volunteers. He, moreover, took with him fifteen lakhs of rupees to be devoted solely to the use of the army. It was further decided to send a force of native infantry by land to Madras, the prejudices of the sepoys rendering it hazardous to send them by sea.‡

* Lieutenant-Colonel, afterwards Lieutenant-General, Sir Henry Cosby, Kt., landed on the coast of Coromandel shortly after Lally had raised the siege of Madras. He immediately joined the army in the field, and from that time until 1775, when he was sent to England with despatches, he was continually employed on active service. In 1772 he was appointed Brigade-Major to the army, at that period the highest staff situation on the coast. The following year he was made Adjutant-General with the official rank of Lieutenant-Colonel, being the first officer appointed to that office in India. In 1778 he was selected to command the cavalry of the Nawab of the Carnatic, consisting of seven regiments of 550 men each, with 200 light infantry and 40 artillerymen. At the siege of Pondicherry in 1778 Lieutenant-Colonel Cosby, in addition to the command of this force, acted as Adjutant-General, but on the reduction of the place he resigned the latter appointment.

† On news of the death of Sir John Clavering on the 30th August, 1777, reaching England Lieutenant-General Sir Eyre Coote was appointed his successor. He did not, however, reach Calcutta until the 23rd March, 1779. In the interval between the death of Sir John Clavering and the arrival of his successor Colonel Giles Stibbert held the appointment of provincial Commander-in-Chief, and he was again appointed to the same office on the departure of Sir Eyre Coote for Madras.

‡ As observed by Colonel R. S. Wilson in his History of the Madras Army, the native troops of the Bengal army had not always evinced an aversion to go on board ship. In October, 1758, two battalions sailed for the Northern Circars under Colonel Forde, and distinguished themselves at the battle of Condore and assault and capture of Masulipatam. In 1767 three battalions were again sent by sea to the Northern Circars under Lieutenant-Colonel W. Smith. The arrangements for the comfort of the men on the voyage were most defective. Two of the ships on which they were embarked, the

Coote arrived at Madras on the 5th November, bringing with him the orders of the Governor-General for the deposition of the Governor, Mr. Whitehill, who had obstinately refused to obey the instructions he had received to restore the Guntur Circar to the Nizam. Mr. Charles Smith, one of the two members of Council, who had warned the Government of the designs of Hyder, was appointed Governor in his room pending the orders of the Court of Directors. The military outlook was gloomy in the extreme. Arcot had surrendered to Hyder on the 3rd November, and the Mysore troops were engaged in the siege, or investment of five places held by British officers, *viz.*, Chingleput, Wandiwash, Permacoil, Vellore and Amboor. The whole of the country in the neighbourhood of Madras had been devastated, and supplies were hard to be procured. Coote set to work resolutely to re-organise the army. On the 13th of the month the troops were formed into three divisions; the first or right, under Major-General Sir Hector Munro, was composed of the first regiment of Nawab's cavalry, the detachment of the Bengal European regiment, six companies of Grenadiers from the Northern Circars, and two battalions of sepoys. The centre division under the Commander-in-Chief consisted of the 1st Battalion 73rd Highlanders,* the artillery and stores 2nd Battalion Madras European regiment, the 15th, 17th and 21st Battalions of sepoys. The second or left division, under Lieutenant-Colonel Lord Macleod, was formed of the troop of European cavalry, 2nd, 3rd and 4th regiments of the Nawab's cavalry, the Tanjore Grenadiers, and the 16th Battalion of sepoys. The force, which had been collected by Lieutenant-Colonel Cosby with the exception of the Tanjore Grenadiers, remained under his orders as an independent command, and was designated the Trichinopoly detachment. The total strength of the force was 1,403 Europeans, artillery and infantry, 5,000 native infantry and 800 of the Nawab's cavalry, with a train of artillery consisting of four 5½-inch howitzers, two 18-pounders, four 12-pounders and thirty-six 6-pounders.

Before Coote was able to move from Madras Captain Keating, who commanded the fort at Amboor, had been compelled to capitulate owing to want of ammunition. At last, on the 17th January, 1781, Coote, with but scanty supplies for his troops, and almost totally unprovided with carriage, marched from Madras. Chingleput was relieved on the 19th. On the 21st a detachment commanded by Captain Davies carried the fort of Carangooly by storm. On the 23rd Hyder was compelled to decamp

"Northington" with 630 and the "Earl of Elgin" with 500 men on board, put into Vizagapatam, and the sepoys being in great distress, both for water and provisions, and being moreover much overcrowded, refused to proceed further by sea, threatening to run the ships on shore if they were not allowed to land, which they were ultimately permitted to do. When the detachment was recalled to Bengal, a part embarked to return by sea. On this occasion the ship with the Grenadier companies of the 3rd Battalion foundered during the voyage, and all on board perished. This unfortunate occurrence, combined with neglect in making proper arrangements for the men, created a repugnance amongst the Bengal sepoys to embarking on board ship, which took many years and much conciliatory management to overcome. See Williams' *Historical Account of the Bengal Infantry*, p. 180, and Wilson's *History of the Madras Army*, Vol. I, p. 290.

* The regiment at this time could not muster more than five hundred men.

from before Wandiwash, which had been most gallantly defended by Lieutenant Flint and Ensign Moore. The British army reached Wandiwash the next day, and the Commander-in-Chief issued an order expressing his sense "of the judgment, bravery and activity of Lieutenant Flint in defending Wandiwash against very powerful attacks." News was here received that Hyder had raised the siege of Vellore, and shortly after that of Permacoil; this latter place had been ably defended by Lieutenant Bishop, who also was highly praised in General Orders.

Coote now heard that a French fleet had appeared off the coast. He at once marched to Pondicherry, and on his arrival found that seven sail of the line and four frigates, under the command of M. d'Orves, had just anchored in the roads, it having been reported that the French inhabitants had been collecting supplies for the troops which they expected the fleet would have brought. Not a moment was lost in disarming the inhabitants, destroying all the boats capable of passing through the surf, and searching for provisions; but much to the disappointment of the army supplies were only found sufficient for one day's consumption. On the 7th February Hyder appeared in sight, marching upon Cuddalore. Coote immediately moved off in the same direction, and reached Cuddalore the next morning, the French fleet being still off Pondicherry. On the 9th he in vain endeavoured to bring Hyder to action. His situation was now most critical, for, whilst Hyder's troops effectually prevented his procuring provisions by land, the French fleet stopped all supplies reaching him by sea.

On the 10th he wrote to the Council at Madras as follows: "I cannot command rice enough to move either to the northward or the southward. I offered him (Hyder) battle yesterday, but I no sooner showed myself than he moved off, and has taken possession of and strengthened all the roads to the southward. I have written to Nagore in the most pressing terms for supplies. I depend upon every effort in your power; everything must be risked to assist me; my difficulties are great indeed. I need say no more to induce you to take such steps as will enable me to act as a soldier." Hyder had fully expected that the French fleet would have brought a body of troops from the Mauritius, and was much disappointed when he learnt that there were no land forces on board. The result was that M. d'Orves failed to come to terms with him, and the fleet, being in need of water and provisions, suddenly sailed from the coast, leaving the British army free to obtain supplies by sea. Before, however, any arrived the army had become solely dependent for food upon the success which attended the efforts of parties who were employed to discover grain which had been buried in pits. At last, when supplies were received from Madras and Nagore, the transport animals were so reduced in strength that they were unable to carry provisions for more than one day, and the army was thus tied down to the ground on which it was encamped.

Hyder, deeming it inexpedient to attack an army which, in the event of discomfiture, could retire into a fortress immediately in its rear, proceeded to overrun the district of Tanjore, leaving behind a force which he considered sufficiently strong to prevent the British collecting supplies.

Sir Byre Coote saw no chance of extricating himself from the difficulties with which he was surrounded except by a general action, and this the enemy skilfully avoided. He did not, however, remain inactive, for foraging parties were sent out almost every evening, and, by going long distances and varying the directions in which they were sent, he not only succeeded in getting sheep and slaughter cattle, but also in procuring a few bullocks suitable for draught. Early in April the fort at Tirovadi, sixteen miles west of Fort St. David, was captured by the Trichinopoly detachment. This success was more than counterbalanced by the loss of the English Fort of Thiaghur, which capitulated on the 7th of June, the garrison having expended all their ammunition. On the evening of the 18th an attempt was made to surprise the fortified pagoda of Chillumbrum, situated about thirty miles south of Cuddalore, and which, it was understood, had been stored with provisions by Hyder. The British, however, were beaten off with a casualty roll of six officers and nearly one hundred and fifty rank and file, and Coote proceeded to Porto Novo for battering guns to enable him to renew the attack.

On the 24th Admiral Hughes arrived in the "Superb" with intelligence that Lord Macartney had assumed the government of Madras,* and had brought from England news of war between Great Britain and Holland, and instructions for the immediate commencement of hostilities against the Dutch possession in the East Indies. The Admiral at first proposed a descent upon Negapatam, aided by a detachment of troops, but on examining the resources of the army it was ascertained that, if the detachment could not be back within twelve days, the whole force would be without food. This idea had, therefore, to be abandoned, and it was decided that the whole efforts of the fleet and army should be directed towards the speedy reduction of Chillumbrum.

The extent of the British losses on their attack on the pagoda having been greatly exaggerated in the reports made to Hyder by his officers, he considered that the time had arrived to complete their discomfiture, and directed all his resources to that end. Marching seventy miles in two days he encamped five miles in front of the British camp, which was a little in advance of Porto Novo. It had the sea in its rear and the river Vellaur on its left; in front, and on the right, were numerous sand hills and ravines, which were at once occupied by the enemy. Hyder having thus effectually barred the road to Cuddalore, it became absolutely necessary to force his position. Coote's situation was again most critical; in his despatch he says: "Large bodies of the enemy's cavalry, who had from our arrival at Porto Novo hovered round our camp, rendered it impossible for even a single hircarrat to return with any intelligence to be depended on, of either the strength or position of the enemy's batteries. Our grand guard and the other outposts were absolutely the boundary and limited extent of our knowledge respecting the enemy." Under these circumstances all idea of prosecuting the attack on Chillumbrum had to be abandoned; the battering guns

* He reached Madras on the 22nd June, 1781.

and all other stores were embarked on board the ships, and the Admiral undertook to cover Cuddalore with a portion of his squadron, and with the remainder to watch the operations of the army and embark the remnant in case of its defeat.

Having served out four days' rice to each man, Coote broke up his camp, and moved out at seven on the morning of the 1st July. The road to Cuddalore passed through a plain, and as the enemy's cavalry appeared in force the army was formed into two lines. The first, under Major-General Sir Hector Munro, was composed of two regiments of the Nawab's cavalry, the 73rd Highlanders,* the Bengal and Madras European infantry, five battalions of native infantry and the Trichinopoly detachment; the second, under Brigadier-General James Stuart,† consisted of four battalions of native infantry. The baggage guard was formed of two regiments of the Nawab's cavalry, a battalion of native infantry and some details. After marching in this order for a mile and a half the position of the enemy became clearly visible. To their left was a range of sand hills parallel to the coast and at a distance of above three-quarters of a mile from the sea. Behind their right and centre was a large lagoon, and batteries had been constructed with great skill and judgment, which swept the whole ground over which the British would have to pass.

The army was now halted, and Coote spent nearly an hour in carefully examining the enemy's position, and more particularly the ground to the right of our army, "in hopes," he said, "of its admitting an advance from that point by which we should avoid the enemy's direct fire from their batteries, and have a chance of gaining the left of their posts to turn or otherwise command them." During this period of inactivity the army was exposed to a warm cannonade from the enemy's batteries, but the British could not afford to throw away their shot in reply, "having occasion," wrote Coote, "for every round we had for more decisive service." Fortunately an officer who had been sent on in front discovered a road which had been cut by Hyder through the sand hills to the left of his position for the purpose of dragging guns to a large redoubt situated within four hundred yards of the sea and commanding the ground over which the British subsequently advanced. Happily the redoubt had not been quite finished, and a commanding hill, close to the opening in the sand hills through which the road passed, had not been occupied.

After satisfying himself as to the correctness of the information he had received Coote directed the army to break into column and take

* Lord Macleod had shortly after Coote's arrival sailed for England, and was succeeded in command of the regiment by Lieutenant-Colonel James Crawford.

† In May, 1776, he was appointed second in command of the troops in the Madras Presidency and posted to the European regiment. He was deeply implicated in the seizure and confinement of Lord Pigot, Governor of Madras, on the 24th April 1778. In April, 1777, consequent on the death of Sir Robert Fletcher, he succeeded to the command of the Madras army, but on the 31st August was suspended by orders from England in consequence of his share in the arrest of Lord Pigot. Owing to technical objections he was not brought to trial until 1780, when he was acquitted on the plea that he had acted under the orders of the majority of the Council, which majority constituted the Government. The finding of the Court was published to the army on the 31st December, 1780, and on the same day he was permitted to return to his duty.

ground to its right, a battalion from the left of each line and eight guns changing front and covering the interval between the two lines, thus protecting their flank. The baggage was ordered to keep close to the shore. In this formation the army moved as rapidly as it could to the eastward, the guns having to be dragged by the sepoys, their bullocks having proved unequal to the task. Skilfully availing himself of the cover afforded from the enemy's fire by the sand hills and a thick hedge, Coote passed through the opening with his first line, drove back a body of the enemy, and then formed line of battle facing to the westward. He had thus placed his first line on the left flank of the enemy's batteries, and had deprived him of the principal advantage of a well-chosen position. The line was now halted under a heavy fire from the enemy's guns, the British hardly firing a shot in reply until the second line should have occupied the sand hills and secured the front line from being attacked in rear. No sooner did Coote see that this had been accomplished than he gave the order to advance. The Mysore cavalry made an attempt to overwhelm the line by a general charge directed diagonally against the left, but the British artillery so long restrained now opened a murderous fire, and the cavalry were repulsed with heavy loss. Coote pressing on forced the enemy's line, and by four o'clock compelled him to retire.

In the meanwhile a strong body of infantry with guns, and supported by a large mass of cavalry, had been ordered by Hyder to fall on the rear of the British. Now was proved the value of the position occupied by the second line, for after a stubborn fight the enemy was compelled to abandon the attempt. Hyder furious at the aspect of affairs ordered all his cavalry to charge both lines simultaneously. The stable horse under his immediate command was to charge the first line, whilst the attack on the second was entrusted to his brother-in-law the Meer Sahib. The first attack was promptly carried out, but was repulsed. Noticing some hesitation on the part of the horsemen directed to attack the second line, he sent orders to the Meer Sahib and other commanders to charge if they valued their heads. Just at this moment the Meer Sahib fell mortally wounded, and a small schooner, which had stood in as close to the shore as soundings would permit, poured a broadside into the cavalry, who, imagining that they were about to be exposed to the fire of the whole fleet, were seized with panic and galloped to the rear.

The repulse of the cavalry, combined with the continued advance of the British commander with the first line, induced Hyder to listen to the advice of some of his officers, and to order the successive retreat, first of his artillery, then of his infantry, and lastly of his cavalry. Coote pushing on halted on the ground the enemy had abandoned, and about midnight was joined by the second line and the baggage. After burying the dead, and paying every possible attention to the wounded, the army pursued the road by which the enemy had retired, and passing through a deep ravine encamped on the north-west side of it, close to the village of Mootypollum, the name by which the Mysoreans call the battle, as Porto Novo, from whence the British marched in the morning, is made to designate the action in the British narratives.

The disparity between the strength of the forces engaged was very great. The English all told numbered only 8,476, *viz.*, cavalry, 830 ; artillery, 598 ; infantry, European and native, 7,048 with 55 light field pieces. Hyder's army, according to the lowest computation, amounted to 80,000 men,* of whom 600 were Europeans and 1,000 Topasses, or others dressed in European clothes, with 47 guns of heavy metal. The disparity in the losses of the two armies was still greater, for, whilst those of the British were only 806 killed and wounded, that of the Mysore army was said by a careful historian, like Wilks, to have numbered 10,000. The heavy loss he attributes to the deadly effect of the British artillery fire on the densely-packed masses of the enemy.

In the report of the action which Coote forwarded to Government he thus refers to those under his command on this eventful day: "I was well seconded by Major-General Munro, who commanded the first line. His spirited and active conduct contributed much to our success. Brigadier-General Stuart, who commanded the second line, and had orders to defend the heights, performed that service much to my satisfaction."

"Every individual of this little army seemed to feel the critical situation of our national concerns : our falling interests required uncommon exertions for their support, and to the honor of this army every nerve was exerted to the very extent of possibility."

"The only difficulty was to restrain the ardour of the troops within prudential bounds. Eager to advance, it became particularly necessary to guard against accidental disorder, situated, as we were, with multitudes of cavalry against us on the watch to take advantage of hurried or confused movements."

"The spirited behaviour of our sepoy corps did them the greatest credit. No Europeans could be steadier ; they were emulous of being foremost on every service it was necessary to undertake."

The importance of the victory of Porto Novo can hardly be over-estimated, for, if the army under Coote had been defeated, every British post in the Madras Presidency, including most probably Fort St. George itself, would have fallen to the enemy. No assistance could have been afforded from Bengal, for in addition to the troops under Goddard, which had been sent to the Western coast, another large detachment of native troops under Colonel Pearse was now on its way to reinforce Coote. The political outlook was most threatening; we have already seen how intelligence of the destruction of Baillie's detachment had caused a change in the disposition of the Rajah of Nagpore. A second reverse to our arms would undoubtedly have been followed by a general

* This is the number given by Wilks. Munro in his narrative estimates the strength of the enemy at 100,000. Coote in his despatch says that an intelligent Portuguese officer, who came over to the English at the beginning of the action, informed him that the strength of Hyder's army was nearly as follows: Artillery 47 pieces well served, 820 Europeans, 1,100 Topasses and others in European dress, cavalry 40,000, twenty-three battalions of sepoys, numbering 18,000, irregular footmen armed with matchlocks and rockets 120,000. Total 178,720.

and active combination of the native powers against the British. Even now a strong body of Nagpore horse was in close proximity to Pearse's detachment, and their uncertain attitude at times caused that officer much anxiety.

To aid the other presidencies Hastings had so denuded Bengal of troops that the number of European soldiers who remained barely exceeded five hundred, and they were dispersed throughout the Presidency. No reinforcements could be expected from home, for England was engaged in a conflict with her revolted colonies, as well as with France and Spain. In this emergency Hastings, deeming that more European troops were absolutely necessary for the safety of the English possessions, entered into negotiations with the Dutch East India Company for the hire of twelve hundred of their European soldiers, who were mostly Germans. The negotiations led to no satisfactory result, for the Dutch procrastinated, and, before a treaty could be drawn up and ratified, Holland had joined the coalition against Great Britain. Hastings' conduct in this matter has been subjected to much hostile criticism. His biographer admits that the terms offered were high. "They not only included the pay of the troops while employed but the cession in perpetuity of the province of Tinnevely, together with permission to make conquests in the neighbourhood of Cochin, and an exclusive right to the pearl fishery along the whole of the coast south from Ramesvaram." The Madras Government to its honor vehemently objected to these terms.

After the action two objects demanded Coote's immediate attention. The first was the relief of Wandiwash, which had been invested by Hyder's son Tippoo on the 22nd June; and the second, to effect a junction with Colonel Pearse's detachment, which had reached Nellore. The necessity for immediately relieving Wandiwash induced Coote as soon as possible after the battle to move to the northward, receiving his supplies from the ships. Hyder retired slowly before him but on every successive day's march Coote had reason to conclude that he was preparing for another general action. On reaching Pondicherry, Coote moved out towards the enemy's camp for the purpose of bringing on an engagement, but Hyder struck his tents and moved off to the westward, and Coote now quitting the sea coast moved first to Permacoil and then to Carangooly. Here he heard that on the 19th July Tippoo had raised the siege of Wandiwash, and having been largely reinforced had marched to intercept the Bengal detachments. Nothing now remained to prevent Coote from marching to join the troops from Bengal. He, therefore, moved by Chingleput to St. Thomas' Mount, where for the present we will leave him.

PART II.

A fortnight after Coote had sailed from Calcutta, Hastings decided to still further reinforce the troops on the coast, and directed that six battalions of sepoys and a company of European artillerymen should march *via* Cuttack to Madras. Lieutenant-Colonel Thomas Deane

Pearse,* Commandant of the Bengal artillery, was appointed to the command of this detachment. The troops were ordered to assemble at Midnapore, whither Major Edmonstone, the second in command, proceeded at once, while Lieutenant-Colonel Pearse remained at Calcutta to be in close communication with Brigadier-General Giles Stibbert, the Provincial Commander-in-Chief, and to hasten the despatch of the necessary stores. Shortly after the orders for the assembly of the force had been issued, a new organisation of the Bengal native army, combined with a considerable increase in its strength, was ordered to be carried into effect from the 1st January, 1781.

Under the new organisation the army was to consist, exclusive of the battalions with Goddard, of thirty-six regiments of two battalions, and each battalion of five companies of one hundred rank and file. A major commandant was placed at the head of each regiment. The battalions were to be commanded by captains, and the companies by lieutenants. A lieutenant was appointed adjutant of each regiment, and a native warrant officer adjutant of each battalion. Two European sergeants were posted to every battalion as sergeant-major and quartermaster-sergeant, and the appointment of native commandant was ordered to be gradually abolished. It was further directed that the pay of each battalion was to be drawn in one abstract by the captain commanding, and that it was to be issued in the presence of lieutenants commanding companies, for the due performance of which duty they were to be held responsible, and were required to make a report and declaration on honor in writing that the men had been duly paid. An abstract of the Articles of War relating to mutiny and desertion was also for the first time promulgated, and it was ordered to be translated into Hindustani and read once a month to every battalion.

Although by the new regulations the number of officers in the rank of major had been very considerably increased, and the promotion of the officers generally much accelerated, the supervision now ordered to be exercised over the commanders of battalions, and more especially the order relative to the payment of the men, was the cause of much discontent amongst the captains. As regards the first-named cause of dissatisfaction, it must be admitted that the captains had grounds for complaint, for a long time elapsed before any rules were laid down defining the powers either of a commander of a battalion or of a commandant of a regiment. In the meanwhile each major acted in

* Born 1742. In his fifteenth year he was admitted as a cadet to the Royal Academy at Woolwich, and on the 8th June, 1757, obtained his commission as lieutenant fireworker. He served with the expedition to the coast of France in 1758, at Martinique and Guadaloupe in 1759, siege and capture of Belleisle in 1761, and siege and capture of Havannah in 1762. In 1768 he was appointed major in the East India Company's artillery on the Bengal establishment, and landed at Calcutta on the 26th August of the same year, and may be considered the first professionally-educated artillery officer who entered the Company's service. On the 24th October, 1769, he was promoted to lieutenant-colonel Commandant. He was an intimate friend of Warren Hastings, and was his second in the duel he fought with Mr. Philip Francis on the 17th August, 1780. Lieutenant-Colonel Watson (the Commandant of Engineers) being second to Mr. Francis.

accordance with his own ideas, and the want of well-defined rules on this subject led, as we shall shortly see, to much unseemly squabbling between the majors and captains of Pearse's detachment.

With reference to the new rules for the payment of the men the case was different. Hitherto the officers commanding battalions had been entirely uncontrolled in all matters connected with the payment of their men. The legitimate income of the officers was comparatively small, and many did not scruple to add to it by defrauding the State by making it pay for men who only existed on paper, and by withholding from those under their command money that was justly their due. The evil was notorious, and many proposals had been made for putting a stop to it, but nothing had ever been really done to check it. The result of these malpractices was that, at a time when the services of the army were urgently needed, a strong spirit of disaffection prevailed in many regiments, solely attributable to the injustice with which the men have been treated in matters connected with their pay and prize money. Already one of the battalions under orders for Midnapore, the 19th, commanded by Captain Peter Grant, had mutinied, the men complaining that Captain Grant had withheld their proper share of prize money for the capture of Chandernagore in July, 1778. In this emergency, taking advantage of a considerable augmentation of the army and the opportunity thus afforded of promoting many of the old commanders of battalions, Brigadier-General Stibbert drew up a scheme for the reorganisation of the army and rules for the payment of the men. Hastings approved of Stibbert's proposals, and without consulting Sir Eyre Coote ordered them to be carried into effect.

Having completed as far as possible all the arrangements which had required his presence in Calcutta, Pearse started on the 9th January, 1781, for Midnapore, where he arrived on the 11th. Shortly before his arrival orders had been received for the disbandment of the 19th battalion and for the men to be distributed amongst the other corps of the detachment. No sooner had this order been made known to the men than they began to desert in large numbers. A Court of Enquiry was directed to assemble to enquire into the grievances of the men of the battalion, and resulted in Major Grant—he had been promoted from the 1st January—being tried by court-martial for defrauding his men of their pay and for making false returns. He was found guilty and cashiered.

The force assembled at Midnapore was as follows : One company of European artillery and one of native ; one hundred Mogul horse-men who had been enlisted by Major Edmonstone ; the 12th Regiment Native Infantry, Major Edmonstone ; the 13th, Major Blane ; the 24th, Major Kilpatrick ; the 25th, Major Wedderburne ; and the 26th, Major Byrne. Sixteen pieces of ordnance were attached to the force, but Pearse wrote from Midnapore requesting that the number might be increased to twenty 6-pounders, being two for each battalion, with four 12-pounders and four howitzers in addition.

The transport consisted of elephants and bullocks. Each camp follower was armed with a spear, and wore a distinguishing metal badge, on which was engraved the number of the corps or the name of the department to which he belonged.

As was customary at the time no tents were provided for the men, but a bell tent was supplied for the preservation of the arms of each company. The officers were supposed to be provided with tents at the public expense, of a pattern which had been approved by Coote, but, owing to the recent increase to the army and other causes, when Pearse reached Midnapore many officers were without tents, and they begged that they might be allowed to make up tents for themselves, receiving the cost of the same from Government. After much delay this was sanctioned, as a temporary arrangement. Pearse strenuously advocated that the existing system should be abolished, and urged that officers should provide their own tents and carriage for the same, receiving a monthly allowance, both in quarters and in the field, to enable them to do so. At last, during the administration of Lord Cornwallis, his representations were successful, and a monthly sum, known as tentage, was allowed to be drawn by every officer, and this arrangement has continued to the present time.

In the meanwhile the attitude of the Mahratta Chief of Nagpore had been a source of anxiety. A large body of his cavalry under Chimnaje Bappoo, his second son, was now in Orissa, and it was feared that, in the event of the British army on the coast suffering another reverse, Chimnaje would invade Bengal. His force, moreover, occupied a portion of the country through which Pearse would have to march. Under these circumstances Hastings, acting on the principle that "self-distrust will never fail to create a distrust in others and make them become your enemies," for, as he continued, "in no part of the world is the principle of supporting a rising interest and depressing a falling one more prevalent than in India," sent Mr. Anderson to Chimnaje to request him to move his troops from the line of Pearse's march lest it might lead to hostilities, and further to request Chimnaje to furnish the detachment with supplies.

Shortly after Pearse received instructions to commence his march, but was directed not to cross the Subanrekha river until he had received further orders. He accordingly marched from Midnapore on the 21st January. Desertions now became frequent, the deserters being chieny men who had been drafted from the 19th battalion. Several were caught and tried, but Pearse was averse to carrying out the sentence of death passed upon them, and wrote to General Stibbert soliciting a general pardon. "It is my opinion of the natives of this country," he said, "that they are soldiers at heart, and may with proper management be made as fine soldiers as any in the world." He had at this time to issue very stringent orders on the subject of musters, and in reporting what he had done says: "I have put every sepoy in the way of knowing his rights, which were always hidden before by every artifice." In a subsequent report he writes: "It has given umbrage that I have counted the files of every regiment, for it is asserted that now officers sign

upon honor, which was not the case before, and those who have the payment have no possible emolument from false musters. Admit the principle, the consequence is that the appearance of the commanding officer upon parade is useless, and he can never muster troops under his command at all." He concluded his letter by soliciting instructions as to how the muster of troops was to be taken.

On the 9th February, satisfactory arrangements having been made with Chinnajee, the detachment crossed the Subanrekha river into Mahratta territory. The crime of desertion had hitherto been leniently treated, but so greatly had it increased that Pearse determined to make an example. The next man who deserted and was caught was tried by a drum head court-martial in the centre of the troops paraded for the purpose, sentenced to death and executed on the spot. He had no excuse wrote Pearse in his report ; " he delivered Rs. 32 to me for his family." The force remained in camp on the south bank of the Subanrekha river until the 11th, when it resumed its march, and reached Balasore on the 14th. In a letter dated 16th February Pearse says : " I am passing through a country as little known as if it were in the midst of China. We always understood that the country from Jellalore to Balasore was a wilderness, but I found the country in the highest state of cultivation. I followed the bullock road by the track of their feet ; they must have passed in thousands to have beaten it so much."

The detachment forded the Mahanadi on the 28th February, and encamped on the bank of the Katjuri river, which was on the southern side of Cuttack island. From hence Pearse reported that he had 273 sick and only 4,409 effectives, and solicited that he might get drafts from the Circar battalions at Ganjam on arrival at that place. On the 2nd March the force marched from Cuttack, and a heavy fog coming on many of the bazar people took advantage of it to desert, and no less than eighty sepoys deserted in twenty-four hours. In order to stop the desertions Pearse promised that on arrival at Jagannath the expenses of the men visiting the temple should be paid. This promise had the desired effect.

The force arrived at Jagannath on the 7th March, and, as it was the Holi, remained there until the 11th. In a letter from this place Pearse gives it as his opinion that one of the principal causes of the desertions was the expense the men were put to for food, having to pay for everything " without hope of the chance of recompense by plunder ; yet they only receive the same sum as in cantonments without any addition." Three days after he wrote : " Another objection was, we had no cowries or pice*—coins of a denomination of which our people had never before heard, and which, therefore, we could not provide. Before we had been where such money passed as we possessed, yet there is no one here to change our money into their coins.

Hitherto the chief difficulties with which Pearse had to contend were

* In the " Lives of the Lindsays " it is stated that in 1780 the revenue of the Sylhet district was Rs. 2,50,000, which was paid in cowries. The cowries were sent to Daoca, where they were exposed for sale.

the insubordinate spirit rife among the British officers consequent upon the new regulations and the disinclination of the sepoys for the service on which they were engaged, chiefly due to the manner in which they were treated by Government. But now a severe epidemic of cholera was to increase his difficulties, and, as this is the first occasion of which we have any record of our troops having suffered from cholera, every detail connected with the epidemic is of peculiar interest.

On the 17th March the force reached Ganjam, halted there until the 21st, and then resumed its march. Its effective strength was 4,049; the sick amounted to 325, and 81 men were on detachment. The next day Pearse reported as follows to the President of the Secret Committee at Madras: "I marched from Ganjam this morning, though we were far from complete in those aids that were necessary, such as coolies, bearers for the hospital, &c., yet such a fatal sickness broke out suddenly in the army as alarmed me beyond measure. Men in perfect health dropped down dead in numbers. The cause is unknown; it was attributed to the bad effect of the water, also to the violence of the sea wind. I suppose both causes operated, but be the cause what it may, I know of no remedy but marching forward. It is necessary to apprise you that by my return I am seven hundred short of my complement, and I have, since the sickness broke out, full five hundred sick in hospital." The next day, the 23rd, he wrote to Hastings: "I beg leave to tell you that my army has met with a disaster which no foresight could guard against; in short, the whole have drunk poison; great numbers are dead and many are dying. It seems the people here use euphorbium juice for soap, and our people not knowing it drunk out of the ponds in which they washed; many dropped down dead; however those are recovering who did not take very large doses, but almost all the servants, drivers and coolies have run away, and I shall be forced to halt a few days at Ichapore. It was only this morning by accident that I learnt the cause assigned for this dreadful attack, and have taken precautions against it." A day or two after, writing to Coote, he said: "We have now nine hundred sick. * * * When the disease attacked our people some fell down dead; others were seized with violent vomitings and purgings and died; others died from violent spasms in the bowels; but we are now recovering, for those who fell down yesterday and to-day were not affected so violently, which shows that our marching on has had a good effect."

On the 24th March Pearse reached Ichapore with nearly half his force either on the sick list or in a weakly condition. Here he assembled the commanding officers to deliberate upon the best means for protecting the men from the prevailing sickness. In a letter which he submitted for their consideration he says: "The calamity will inevitably increase as we advance, for the winds and dews seem to be the cause of it, and not the water as was supposed, nor the provisions. * * * Our men are totally unprovided for the climate; they have no tents, and in general not even blankets to protect them from the inclemency of the season. Had I been acquainted with the nature of the clime the calamity might

probably have been prevented by an application for tents.* The result of the deliberations of the commanding officers was that a number of the inhabitants were turned out of their houses and the sepoys placed in them.

As there were only two doctors with the force Pearse applied for permission to employ in a medical capacity the well-known M. Claude Martine, who represented that he had been educated as a surgeon and who had followed the force from Calcutta, and was ever ready to offer himself in any capacity when the wants of the service presented an opening for employing him. Pearse's application was complied with.

In a letter to Hastings, written on the 26th March, Pearse wrote : " I have just seen Dr. Gillies, who tells me that he has opened some of the bodies, which had every appearance of having suffered from a strong poison. Excuse contradictions ; they are only about things of conjecture and things I do not understand. The preceding part of the letter was written yesterday and the day before. I have now the satisfaction to say that we are fast recovering, but we have 1,136 sick." Hitherto the sickness had been confined to natives, but on the 28th March Pearse reported that the Europeans were beginning to suffer.

The force marched from Ichapore on the 1st April, leaving 320 sick behind, but the halt and shelter had been attended with the most beneficial results, and Pearse determined that, until the men should be provided with tents, he would on all possible occasions quarter them in villages. On the 3rd April he entered the Chicacole district and wrote to Hastings : " I have this day overcome the deserts of Ganjam and entered the Chicacole district. My men are fast recovering. Desertion swept off a good many, but it is abated, and after all we have 3,955 fighting men, so if we get drafts to complete us we shall do very well. The post was general throughout these districts,† though I knew it not. We reached Ganjam just as the equinox and the long shore winds blew death and dismay in our faces, hence the desertions."

As has already been said, the order directing the new organisation of the army did not clearly define the respective powers of majors commanding regiments and of captains commanding battalions. Pearse in his letter of the 3rd April refers to the constant wrangles between the

* Small tents were supplied by Government for the protection of the arms of the Bengal sepoys when on the march, but it was not until 1797 that tents were provided for the men. In Madras from an early period the men provided themselves with tents. In October, 1780, tents were furnished to the sepoy battalions by Government ; each tent held 50 men, cost Rs. 112-8, and was carried by two bullocks.

† Hastings in a letter to England, dated 28th April, 1781, writes thus regarding the detachment : " What follows is too horrid to detail ; a contagious distemper seized the detachment at Ganjam, and threatened to annihilate it. It exactly resembled the disorder called Mordeche, or Mordecheen ; in Europe, Cholera Morbus ; but seems to be a species of the plague, and to have been caused by exhalations from the rains, which had fallen most incessantly and with great violence during two months. It has travelled since to Calcutta, where it made an alarming havoc for about ten days. By a report which I ordered to be made to me, of the number and names of inhabitants who perished by the distemper between the 11th and 21st of this month, there appears to have died in all 879, multiplied by reports into many thousands. The weather has cleared and the mortality abated." *Life of Warren Hastings*, Vol. II, p. 339.

majors and captains; "the latter," he wrote, "want to make the former cyphers." He instanced the case of Major Kilpatrick, who had raised a battalion and now commanded the 24th Regiment, N. I. He ordered the two captains commanding battalions of the regiment, *viz.*, Sandford and Scott, to send the native officers to his tent in order that he might ascertain the cause of the desertions. At this the captains took offence, and denied that the major had the right to issue such an order. Captain Sandford was the more violent of the two, and instigated, it is said, a subaltern to put a subadar under arrest, who had gone to Major Kilpatrick. Pearse sent for the two captains, released the subadar, and ordered Captain Sandford to apologise.

In the letter before referred to he urged that sircars in regiments should be abolished and reports collected from orderly havildars. He then continues: "That I may carry 3,500 men to Coote is the utmost of my wish, and I think he will have no reason to wonder there are no more when he considers the great distance, without a single day's plunder to keep the men in temper, or a single day's fight to divert their minds from a country that seems made up of the *shreds and fragments of a world, in Dame Nature's shop, producing nothing but sand and craggy rocks, brackish water and pestiferous winds.* * * * * *

* * We have not in the whole army sixty of the drafts* we received, which shows that we should have been much stronger if we had had another regiment instead of them, and if we had been formed on the esplanade as I begged and entreated, we should have had tents, and our army would not have been exposed to these terrible winds and dews. * * * * * The surgeon who came to us from Ganjam was taken ill the morning before last, and he was dead before 9 P.M. of this disorder; if we lose another we shall be undone."

The force reached Vizianagram, which Pearse described as a land of plenty, on the 11th. Here he was informed that he would be joined by 2,000 Mahratta cavalry, whom Chimnaje, in accordance with a treaty concluded with Mr. Anderson on the 6th April, had agreed to furnish, receiving a lakh of rupees per month in return for their services. Here, too, twenty deserters rejoined, and Pearse sent out a proclamation of pardon to all who would give themselves at places within his reach. After a halt of ten days the detachment marched for Ellore.

From a return sent to Coote, dated Vizianagram, 20th April, 1781, the strength of the force was as follows:—

European company of artillery—1 captain, 1 captain-lieutenant, 4 lieutenants, 5 lieutenant fireworkers, 1 adjutant and 1 quartermaster. Total number of officers, 13. The number of non-commissioned officers and men was: 1 sergeant-major, 1 quarter-master-sergeant, 4 sergeants, 6 corporals, 3 drummers, 80 bombardiers and gunners; there was also 1 commissary and 1 conductor, who ranked as non-commissioned officers. Golunday company—2 jemadars, 8 havildars, 8 naicks, 2 drummers, 82 golundays. Troop of native cavalry—1 captain, 2 jemadars, 2 duffadars, 21 troopers.

* Chiefly from the disbanded 19th Battalion.

Present state of the five Battalions of Native Infantry.

Five Regiments of Native Infantry.	BRITISH OFFICERS.				BATTALION STAFF EFFECTIVE.								Drummers.	Subadars.	Jemadars.	Havildars and Sepoys.	Total Native Officers, Drummers, Havildars and Sepoys.	Wanting to complete Havildars and Sepoys.
	Majors.	Captains.	Lieutenants.	Ensigns.	Sergeant-Majors.	Drill Sergeants.	Quarter-Master-Sergeants.	Native Commandants.	Havildar-Majors.	Sikars.	Doctors (Natives).	Native Adjutants.						
	5	10	36	5	9	8	10	3	10	50	19	10	59	50	96	3747	3,942	1,253
TOTAL ...	56				119								59	50	96	3747	3,942	...

The sick, both those who were in camp and those who had been left at different places on the road, were included in the above. They numbered 5 subadars, 7 jemadars, 5 drummers, and 815 havildars and sepoy.

The disputes between the captains commanding battalions and the majors commanding regiments continued. Captain Pearson and Lieutenant Vanrizdell, commanding battalions of the 25th Regiment, Native Infantry, complained that Major Wedderburne had forbidden them to parade their battalions for manœuvre without his permission. This they contended was contrary to the regulations. Pearse upheld Wedderburne on the ground that officers commanding battalions were not independent of the officers commanding the regiment.

On the 29th April Pearse in a letter addressed to Hastings attributed the desertions to a certain extent to the disputes amongst the officers, and to the fact of young officers having by the new regulation been placed in command of corps, and not being acquainted with the men, passed over veterans for promotion, promoting petty boys instead.

This caused great dissatisfaction. He concludes this letter by saying he had not heard a word of the Mahrattas, and that, if they did not join the army in May, they would not be able to do so that year, as the Kistna would be in flood and bar their junction.

On the 7th May the force reached Peddapur. Here Major Kilpatrick placed Captain Sandford under arrest, and Pearse deemed it necessary to order the trial of the latter by court-martial, and Major Edmonstone was appointed president of the court. The officers commanding battalions sent an appeal to General Stibbert against Pearse's ruling as to the powers of officers commanding battalions. One of their complaints was that majors had the power of appointing havildars. The regulations laid down that captains commanding battalions should exercise the power of lieutenant-colonels, and majors that of colonels, and it was argued that, as colonels commanding European regiments did not appoint sergeants and corporals, majors commanding native

regiments should not have the power of appointing havildars. Formerly colonels commanding brigades had been invested with the power of promoting to the rank of havildar, but it was said they delegated the power to the officers commanding battalions. Some letters and paragraphs having appeared in *Hickey's Gazette* abusing Pearse and the majors, Hastings prohibited the post office from carrying any newspapers or packets to the force.

After a halt of seven days at Peddapur the detachment resumed its march, and arrived at Ellore on the 20th. In his reports from this place Pearse wrote: "I am constrained not to have heard of the Mahratta horse. We must cross the Kistna before the 2nd of June, and if we there wait for the Mahratta horse we shall eat up all our supplies; if to avoid this we push on the horse may never join. I have stated all this to Coote, who has ordered me to Nellore. This was before he had heard of the Mahratta horse."

In the same report he states that the Hindoos in his army were nine out of every ten, but that twenty-nine Hindoos had deserted for one Mahomedan. This he attributed to the fact that the Hindoos stinted to save money, as much as from 65 to 110 rupees having been found on those that died. The Mahomedans, on the other hand, lived well and spent their money, and therefore the service had a tie upon them which it had not on Hindoos. For this reason he recommended that all possible encouragement should be given to Mahomedans to enlist, and that we should "cease to seek for tall smooth-faced Hindoos and get shorter and rough-faced Mahomedans."

On the 30th May the force crossed the Kistna, and on the 1st June numbered 3,000 men under arms, and shortly afterwards was joined by two Circar battalions from Masulipatam. A large number of bullocks had been taken on from Ellore for Coote, who was much in want of them to drag his artillery and carry his provisions, but owing to want of grain 1,600 of them had to be left behind on the road. The detachment was detained on the south bank of the Kistna until the 11th June, waiting for supplies of money, cattle and provisions. Resuming its march it reached Nellore on the 25th June.

From Midnapore to Nellore the distance is 645 miles. The whole of the route was most carefully surveyed. The distances were measured with a perambulator, and Pearse himself for some time took the observations for latitude and longitude, but latterly this duty was performed by Lieutenant Colebrooke, the future Surveyor-General.

From Nellore Pearse wrote to the President of the Secret Committee at Madras as follows: "The Foudjar has got a great deal of grain, more than I can carry, for I have only brought about 5,000 bullocks from Masulipatam, and of these many are hardly able to bear loads. We have besides 1,200 draft bullocks, of which 280 are worth little and 350 for slaughter; these must be for your army. They wanted to deliver me large flocks of sheep, but I declined taking them, because they would only encumber me and perish on the road. The Foudjar has 2,000 bullocks ready for us. Experience has confirmed me in the opinion I have always strenuously urged that all ammunition ought to go in carriages, for the

draft bullocks we brought with us better than when they set out ; yet all the pack cattle are nearly disabled from sore backs, yet they can all be put to the traces. The magazine bullocks are a subject of eternal vexation ; carriage can go where guns can."

The Madras Council having nominated an officer to command the troops of that Presidency with the detachment, Pearse appointed Major Edmonstone to command the Bengal troops.

Pearse remained at Nellore until the 23rd July, when, in accordance with instructions from Coote, he marched for Pulicat, the sick, some heavy guns and a Circar battalion being left behind. The ordinary road from Nellore to Madras passes to the westward of the lake of Pulicat at the distance of from ten to fifteen miles from the sea ; there was, however, a shorter route along the shore which was sometimes preferred by travellers lightly equipped. Tippoo, who had been sent by his father to intercept the Bengal detachment, did not deem the latter route practicable for troops, and whilst he was preparing various impediments to the progress of the detachment by the upper road, Pearse, under instructions from Coote, was marching by the sea shore. Coote, unwilling to risk the separate movement of the corps for the last thirty miles, marched to the fort of Pulicat on the northern bank of the lake, and there, on the 3rd August, 1781, effected a junction with the reinforcement from Bengal. Coote, with his army thus reinforced, then returned to the Mount.

PART III.

By an order dated 8th August, 1781, the army was now brigaded as follows :—

The four regiments of cavalry to form a brigade of cavalry.

1st Brigade of Infantry.

Field Officers.

1st Battalion H. M. 73rd
Regiment.
Bengal European Infantry
Regiment.
2nd Battalion 1st Madras
Infantry.

Lieutenant-Colonel Crawford,* Majors.
Elphinstone and Mackenzie
(H. M. 73rd Regiment), Major
MacGowan (Bengal).

Lieutenant Braggs, 73rd, Major of Brigade.

Nine 12-pounders and five howitzers.

2nd Brigade of Infantry.

Field Officers.

12th and 25th Regiments
Bengal Sepoys.
8th, 16th and 21st Car-
natic Battalions.

Lieutenant-Colonel Ross Lang† (Madras),
Major Edmonstone (Bengal).

Lieutenant Richardson (Madras) Major of Brigade.

One 18-pounder, one 5½-inch howitzer, ten 6-pounders.

* Succeeded Lord Macleod in the command of the 73rd Regiment.

† Was at this time commanding at Vellore, and did not join the army in the field until later on.

8rd Brigade of Infantry.

Field Officers.

13th Regiment Bengal
Sepoys.
"Trichinopoly Detach-
ment,"* and the 9th, 17th
and 18th Carnatic Batta-
lions.

Lieutenant-Colonel Pearse (Bengal),
Major Blane (Bengal).

Captain Williamson (Bengal) Major of Brigade.
One 18-pounder, one 5½-inch howitzer, ten 6-pounders.

4th Brigade of Infantry.

Field Officers.

24th Regiment Bengal
Sepoys.
2nd and 4th Carnatic
Battalions.
7th and 8th Circar Bat-
talions.†

Lieutenant-Colonel Owen,
Major Kilpatrick (Bengal).

Captain John Grant (Bengal) Major of Brigade.
One 5½-inch howitzer and ten 6-pounders.

5th Brigade of Infantry.

Field Officers.

26th Regiment Bengal
Sepoys.
4th, 15th and 20th Car-
natic Battalions.

Lieutenant-Colonel Brown (Madras),
Major Byrne (Bengal).

Lieutenant Oliver (Madras) Major of Brigade.
One 5½-inch howitzer and ten 6-pounders.

On the 9th August Pearse forwarded for the orders of Sir Eyre Coote the proceedings of the court-martial upon Captain Sandford. The prisoner was sentenced to be reprimanded. Coote confirmed the sentence, and directed that he should be reprimanded by Colonel Pearse in the presence of Majors Blane and Wedderburne. Captain Sandford accordingly attended at Colonel Pearse's tent, was reprimanded, and released from arrest. He immediately proceeded to his own tent, put on his sword, and returning to Colonel Pearse's challenged him to fight a duel. For this Captain Sandford was again placed in arrest and again tried, but the result of the trial cannot be traced.

* This was the detachment under Lieutenant-Colonel Cosby which joined Sir Hector Munro at Chingleput after the retreat of the army from Conjeeveram, and was thereafter borne on the returns of the army as the "Trichinopoly Detachment." It consisted of two regiments of native cavalry under Captain Jourdan, the Grenadiers of the 9th, 13th and 18th Battalions from Tanjore, the Grenadiers of the 6th and 19th Battalions from Trichinopoly, and three battalion companies of the latter battalion. These battalions are represented by the present 8th, 9th and 13th Regiments of Madras Infantry—see note, p. 2, Vol. II of Wilson's History of the Madras Army.

† By an order dated 16th June, 1769, the native troops on the Madras establishment which served in the South were designated "Carnatic Battalions," and those in the North "Circar Battalions." These distinctions were abolished in October, 1784, and it was directed that all battalions on the establishment should be known as "Madras battalions."

The force under Coote now numbered close upon 12,000 men, and would, if it had been properly equipped, have been ample for the service it was required to perform. The transport and commissariat arrangements, however, were lamentably defective. The cattle for draft purposes brought by Pearse from Ellore and other places were wild from pasture, and had to be trained before they could be of any use, while of the cattle officially reported to have been collected at Madras during the absence of the army not one-half was forthcoming. After a searching enquiry into the resources of the army it was ascertained that, exclusive of what could be carried by the men themselves, it was impossible to carry supplies sufficient to last the army for more than one and a half days. It was, therefore, deemed impracticable to attempt either of the great objects of the campaign—the relief of Vellore, or the siege of Arcot.

Coote now decided to attempt the capture of the fort of Tripassore, situated thirty-three miles to the westward, on one of the roads leading to Arcot and Vellore. Poonamallee, an intermediate place, was still in the hands of the British. By encamping between Madras and Poonamallee, and again between the latter place and Tripassore, Coote calculated that, by employing all the cattle at his command, he would be enabled to carry to the front a sufficient quantity of supplies for the object he had in view. On the 19th August he arrived before Tripassore, which was garrisoned by fifteen hundred men. On the 22nd, a good practicable breach having been effected, preparations were made for the assault. The garrison now offered to surrender on terms they had previously refused. The offer was rejected, and the enemy's commander was told that he must surrender unconditionally within a quarter of an hour, or stand the consequences of an assault. Scarcely had this message been despatched when news was brought that large bodies of the enemy under Hyder were in sight. Not a moment was to be lost; orders were at once given for the assault; but as the troops emerged from the trenches the flag of truce returned with an acceptance of the terms imposed, and the assailants ascended the breach without opposition. Hyder retired as soon as he learnt that the place had surrendered.

Ever mindful of the number of British subjects in the hands of Hyder Coote now proposed to exchange the garrison of Tripassore for an equal number of British soldiers in confinement in the dominions of the ruler of Mysore. "The men taken at Tripassore," said Hyder in his reply, "are faithless and unworthy; they know that they dare not approach me; they are your prisoners, and I advise you to put every one of them to death speedily." Coote unable to feed his prisoners was compelled to release them, making them, however, go through the form of promising not to serve against the British during the continuance of the war.

The store of grain found in the fort was so trifling that, on the night of its capture, it was necessary to send a convoy to Poonamallee for a fresh supply. Hyder in the meanwhile had retired near to Perambakum, the place where he had annihilated Baillie's detachment in the preceding September, and considering the spot a lucky

one he decided to remain there and accept battle from the British. Coote hearing of this, and anxious to obliterate the remembrance of Baillie's defeat, determined to accept the challenge. Sending his baggage and some of his heavy guns into the fort of Tripassore, and with each of his men carrying six days' supply of rice, he marched to Perambakum on the morning of the 26th. While the troops were preparing to encamp Coote with his personal guard* advanced to an eminence $2\frac{1}{2}$ miles distant to reconnoitre the enemy's position. From this eminence he could see Tippoo's encampment. He was then striking tents, and shortly after his troops marched off towards Pollilore.

At daybreak on the 27th the army again advanced, two regiments of cavalry, the 8th Carnatic battalion with its guns and the General's own guard with their galloper guns forming the advance guard under Lieutenant-Colonel Brown. The baggage was on the right flank protected by the Mogul horse, a battalion of the Nawab's troops and the men belonging to the Vencataputtyraze raja. Two regiments of cavalry and the 24th Bengal sepoy formed the rear guard, which was commanded by Major MacGowan. The army marched by files ready to form two lines. The first commanded by Major-General Sir Hector Munro was leading. It was composed of the 1st, 2nd and 3rd brigades, commanded respectively by Lieutenant-Colonels Crawford and Pearse, and Major Edmonstone. The second line followed, commanded by Brigadier-General Stuart, and consisted of the 4th and 5th brigades under Lieutenant-Colonel Owen and Captain Davis, who commanded the 5th brigade during the time Lieutenant-Colonel Brown was in command of the advance guard.

The army advanced in this order above six miles, when it entered an avenue of banyan trees on the Conjeeveram road. Proceeding a little over three miles up this road the advance guard reported at about 9 o'clock that the enemy was in force in front and on the right flank. Just at this time a strong land wind accompanied by dust suddenly sprang up, and blowing right in the faces of the British completely obscured distant objects.

Immediately opposite to and stretching along the right of the British was a plain covered with thick jungle, and here and there intersected by watercourses. On the left was also a plain—the spot where the fate of Baillie's detachment had been decided. This plain was cut up by much deeper watercourses than that on the right. At its further end a mile to the front, and distant one thousand yards from the avenue, was the ruined village of Pollilore, from which the action which ensued takes its name. Six hundred yards to the left of the advance guard was a tope of trees, with a watercourse on its right and front. At once perceiving the importance of this tope, Coote ordered the 8th Carnatic battalion with its guns to occupy it. The enemy seeing this opened fire from two or three guns on the tope, and a Bengal regiment was ordered to be ready to support the Carnatic battalion.

* A weak troop of European cavalry, three troops of native cavalry and a company of sepoy marksmen.

The first line was ordered to form to the right of the avenue. This was done on the supposition that, as the enemy were in front, it would be necessary to attack in that direction. On account of the jungle and ravines, however, line could not be formed at right angles to the avenue as had been intended. The leading brigade was, therefore, formed up somewhat obliquely to the right. Scarcely had it taken up this position than eight or nine guns opened on it from a distant tope, and taking the brigade nearly in flank caused some casualties. This necessitated its changing its position still more to the right, and it was formed up behind some jungle. Before this movement had been completed the British iron 18-pounders and the guns of the 2nd brigade had come into action, and checked the fire of the enemy. Coote finding the jungle not impenetrable, ordered the leading corps to push through. With some little difficulty this was accomplished, and other regiments following the line drew up on a fine plain between the jungle and the tope in which the enemy's guns were posted. As soon as the enemy perceived the line drawn up on the plain they drew off their guns and retired to a distance of a mile and a half.

In the meanwhile the second line under Brigadier-General Stuart had advanced up the avenue, and reached a spot immediately opposite the post in the tope on the left. Stuart was directed to support it with a brigade and to detach two battalions to reinforce the baggage guard, which was threatened by the enemy's horse. The leading brigade of the second line, commanded by Lieutenant-Colonel Owen, was ordered to the tope. It now consisted of only two weak battalions, together numbering not more than 800 men. These battalions were the 14th Carnatic (now the 14th M. N. I.) and the 7th and 8th Circar; these two latter were so weak that they had been placed on the roster as a single battalion. The stronger battalions of this brigade had been detached, the 24th Bengal regiment being on baggage guard and the second Carnatic battalion in garrison at Tripassore. The post at the tope was much galled by a heavy fire from the enemy's guns. The 8th Carnatic battalion and part of a Bengal regiment which had first occupied it held the front, and the ravines and hollow ground near it afforded them tolerable cover. On arriving at the tope Owen ordered the 14th battalion with its two 6-pounders and a howitzer to extend to the right, where cover was to be found for the men. The Circar battalion was directed to drive some of the enemy's Poligars out of a ruined village, from whence they galled by their fire the troops in the tope. The battalion advanced in disorder, and in spite of the exertions of its officers retired in such disgraceful confusion that all hope of their again advancing had to be abandoned.* Fortunately just at this moment the 20th Carnatic battalion, which

* The Circar battalions had become inefficient from having for many years been broken up into small detachments employed on civil duties. They, moreover, considered that they had been enlisted for purely local duties, and deemed their march to the South a breach of agreement. The men of the 7th and 8th deserted in such numbers that on their arrival in camp they were placed on the roster as a single battalion—see pp. 18, 35 and 36, Vol. II of Wilson's History of the Madras Army.

had been ordered by General Stuart to reinforce the troops in the tope, arrived upon the scene. The battalion was at once directed to move against the Poligars; it advanced with great steadiness, and drove the enemy out of the village.

It now became apparent from the disposition of the enemy's troops that the post at the tope was about to become the object of a general attack. Stuart was, therefore, directed to proceed to the tope with the only battalion of the second line which had not been detached. Almost immediately on his arrival he was struck by a round shot, the same shot also disabling Lieutenant-Colonel Brown. Lieutenant-Colonel Pearse was about this time detached from the first line to strengthen the troops on the left. Moving by the broken ground in rear of the tope he took up a strong position in the ravines to its left. The enemy's cavalry every now and then made their appearance on his left flank, compelling him occasionally to wheel back the 9th Carnatic battalion to prevent a front in that direction. Pearse posted his guns in a carefully-selected position, and Coote in his report of the action wrote strongly as to the efficiency of their fire, throughout the remainder of the day their shot frequently falling among the flag elephants, whose standards were seen over the rising ground where Hyder himself was posted.

The remainder of the first line followed Pearse's brigade to the left, and as soon as all the corps had formed up a hot fire was opened from all the British guns. The enemy divining that this was the prelude to a general assault limbered up their guns and drew them off. Coote, perceiving that the village of Pollilore covered Hyder's left flank, determined to gain this position, from whence he would be able to enfilade his whole line. Edmonstone's brigade with the infantry of the General's personal guard was accordingly ordered to take possession of the village. This was soon accomplished, and the guns of the brigade, having been placed on a suitable spot, enfiladed Hyder's regular infantry, causing them heavy loss.

At 3 o'clock in the afternoon Pearse had been reinforced by the 4th Carnatic battalion. At 5 o'clock Pearse with his brigade joined Lieutenant-Colonel Owen in front of the tope, where the 8th, 15th and 20th Carnatic battalions had been got ready for an advance, leaving the 14th Carnatic and the Circar battalions with their guns at the tope. These two brigades now advanced as rapidly as the nature of the ground would admit. Crawford and Edmonstone were ordered to co-operate with their brigades. Pearse and Owen advanced steadily against the centre of the enemy, where a number of guns were posted, but on seeing the advance of the British the guns were limbered up, and the whole of Hyder's army went off in great confusion, retiring that night to a considerable distance beyond Conjeeveram, and the next day taking the route to Arcot, leaving a flying camp of cavalry to watch the motions of the British.

The corps on the British left advanced beyond the ground on which Hyder had drawn up his forces, and there lay on their arms for the night. The next day Pearse's brigade advanced towards Conjeeveram, and the enemy's camp of cavalry broke up and joined their main army.

The fatigues the army had undergone the previous day rendered rest necessary. The troops, moreover, were employed in attending to the wounded, burying the dead, collecting shot, and lastly in decently interring the remains of Baillie's detachment.

The loss of the enemy in this action was estimated at close upon 2,000, whilst that of the British was: Europeans killed 28, wounded 25; Natives killed 105, wounded 207, and missing 58. Amongst the wounded were Brigadier-General Stuart and Lieutenant-Colonel Brown; they were hit by the same shot, and each had to have a leg amputated.

This victory in no way improved the aspect of British affairs, for on the 29th Coote was compelled to return to Tripassore, not having a single day's provision left for the fighting men, and the followers not having had any rice for two days.

Shortly after the action Sir Hector Munro quitted the army, and went to Madras for the purpose of embarking for England.*

The disputes between the captains and field officers of the Bengal regiments continued, and led to several duels, Major Kilpatrick, commandant of the 24th Bengal infantry, having been killed in a duel by Captain Scott. The survivor was tried by court-martial. The following is the finding of the court, which is dated 21st September, 1781:—

"The court having well considered the evidence for and against the prisoner Captain Richard Scott, together with what he has urged in his defence, are of opinion that the charge exhibited against him, *viz.*, of his having been accessory to the death of Major Samuel Kilpatrick, has been fully proved, but, as through the whole course of the proceedings many circumstances occur very favorable and alleviating, they do, therefore, acquit him of any degree of criminality, and he is hereby acquitted accordingly.

(Signed) GEORGE MACKENZIE,
Major, 73rd Regiment, and President."

To the north-west of the road leading to Arcot is a country occupied by certain Poligar chiefs, the principal of whom were Vencataputtyraze, Bomraze and the Calastray raja. The retainers of the former had joined Coote, and formed part of his baggage guard at the battle of Pollilore. The two latter were with Hyder, as they said by compulsion, and that they only waited for a favorable opportunity to change sides, and represented that, if the British army would march into their country, it would obtain supplies in abundance. Coote, who shortly after the action of Pollilore had gone to Madras to represent to Government the state of the army, was induced by Lord Macartney†

* He was, however, prevailed upon by Lord Macartney to take command of an expedition against the Dutch Settlement of Negapatam. He left Madras in the fleet under Admiral Hughes, and arrived off Nagore on the 20th October. He landed next day, and joined the army with 300 marines and 600 seamen. On the 29th he carried the redoubts in front of Negapatam, and on the 11th the place capitulated. Some little time after this he embarked for England.

† Lord Macartney assumed the Government of Madras on the 22nd June, 1781, and brought intelligence that Holland had joined in the war against Great Britain.

to agree to move the army into the territories of these Poligars, relying upon their promises to furnish supplies. Accordingly, having rejoined the army, Coote on the 21st September marched to Tritany, and a day or two after captured the petty fort of Paloor in that neighbourhood. With the aid of a small stock of grain found in that place, but more particularly from the success which attended the search for subterranean supplies of food, he was able to subsist his force from day to day, constantly receiving promises of help from the Poligar chiefs, none of which, however, were fulfilled.

Whilst at Paloor, Coote received from Lieutenant-Colonel Lang, commanding at Vellore, an account of the reduced state of his provisions, and a representation that, if not speedily relieved, he would be compelled to surrender. Hyder was, moreover, reported to be distant only ten or twelve miles, near to the hill of Sholinghur, and to be strengthening a position to bar the road to Vellore. Calculating that he had exactly a sufficient quantity of supplies to carry him back to Tripassore, Coote decided to fight another action. He wrote to the Government explaining his situation and urging that at least one day's supply of rice should be sent to Tripassore to provide alike for the contingency of the enemy declining to fight, or of the result of the action not being so decisive as to afford hope of his being able to relieve Vellore.

Leaving some of his heavy guns, together with the greater part of his baggage, in the fort of Paloor, Coote, on the evening of the 26th September, marched seven miles in the direction of Sholinghur. Heavy rain fell that night, and prevented the army resuming its march in the morning. Hyder apprised of the march of the British, and also of the cause of their halt, gave out that his army would not move that day. In consequence of this order all his cattle were sent some distance to graze, and many of his troops dispersed to seek for grain in the adjacent villages, the want of cavalry in the British army leaving them free to wander without fear of danger.

Taking a detachment of cavalry Coote went out to reconnoitre, and ascending a height observed a long ridge of rocks occupied by the enemy. He ordered the second brigade out from camp, and having dislodged the Mysoreans drew up the brigade with this strong pass in its rear. From this ridge Hyder's whole army was visible, distant about three miles. Coote now sent orders for the rest of his army to join him with all practicable expedition. His orders were promptly obeyed. The baggage, escorted by two battalions with four 6-pounders, was placed in a position where it remained secure throughout the operations of the day.

According to the usual practice the army was told off into two lines, but marched in one column. After passing round the left of the ridge of rocks it moved in a direction parallel to the line of the enemy's encampment until the centre of the first line, when fronted, should be opposite the main body of the enemy, distant about two miles, and drawn up in front of their camp, then in the act of being struck. The second brigade under Major Edmonstone was on the right of the first

line, and was directed to halt when it reached a hill, upon which, when fronted, its right would rest. There was a smaller hill to the left on which the left of the line rested, and the rear was secured by the ridge of rocks. Coote's object was to induce the enemy to change front, hoping to take advantage of the confusion which would be sure to occur in its unwieldy masses whilst carrying out the movement.

The second brigade, however, advanced further than Coote had intended ; this separated it from the first or European brigade. The enemy's guns now opened a distant cannonade, and Coote, deeming it more advisable that the troops should endure this fire when in motion than when halted, ordered the whole line to advance, the second brigade being directed to incline to its left to regain touch of the first brigade. As the line advanced it was necessary for some parts of it to defile to pass a group of rocks. At this moment two large bodies of horse charged with great determination. One body charged the 18th Bengal regiment and the 17th Carnatic battalion of Major Byrne's brigade ; they came on resolutely, but suffered severely from grape and round shot from the guns near those regiments. The two battalions behaved with great steadiness, reserving their fire until the horses were close up to their bayonets, when pouring in a volley their assailants drew off with heavy loss. At the same instant Hyder's select corps of stable horse charged the 18th and 21st Carnatic battalions of Lieutenant-Colonel Owen's brigade. Owing to the nature of the ground there was a considerable interval between these two battalions ; they received the cavalry steadily, and repulsed a front attack. The horsemen then made for their exposed flanks ; this brought them under a heavy cross fire from the battalions next to the 18th and 21st, and so galled were they that they galloped through the intervals to the rear, sustaining additional loss from the fire of the rear ranks, which were faced about.

The enemy, perceiving that their cavalry had been totally defeated, began to draw off their nearest guns. The first line, under Lieutenant-Colonel Crawford, was ordered to follow them, and the second brigade, bringing up their artillery before the enemy was out of reach, warmly cannonaded their rear corps. Night coming on the pursuit had to be abandoned, the General not deeming it prudent to divide his small force.

Whilst the first line was thus occupied Coote received information from Pearse, who commanded the second, that he was hard pressed, and that some of his field pieces were in want of ammunition. One large body of the enemy was on his left flank and another under Tippoo with twelve guns in his rear ; the latter force, it was evident, was intended to attack the baggage. Pearse was ordered to change front partially to his left, at the same time keeping up communication with his baggage ; this movement was performed with celerity and precision. The enemy attempting a corresponding movement got into confusion, and suffered severely from the British guns. They now drew off, and Tippoo at the same time abandoned the idea of attacking the baggage. At about 8 o'clock the baggage was ordered to join Pearse and, this effected, that

he should join the first line. The junction was completed by midnight, and the army encamped in the high ground the enemy had occupied.

The acquisitions of the day were three cavalry standards and one gun, but Coote stated, in a note written from the field of battle, he would willingly have exchanged these trophies together with the credit of the victory for five days' rice. The loss of the British in this action only amounted to 100 killed and wounded. "The Mysoreans," says Wilks, "uniformly describe the battle of Sholinghur as a surprise, and admit it to have been a severe defeat, in which their loss probably exceeded 5,000 men."

The day after the action Coote received information that the Poligar chiefs, Bomraze and the Calastray raja, had left Hyder. He, therefore, on the 28th, marched through the Sholinghur pass, and encamped near Bomraze's country, hoping to be able to draw supplies from thence. By this movement also he approached nearer to Vellore. Hyder, furious at the defection of the Poligars, despatched a picked body of 6,000 men without guns to ravage their country, a proceeding which would effectually have prevented the British from obtaining the supplies of which they were in need. Coote, although suffering from severe illness, determined on immediate action, leaving his camp on the 14th October with three battalions of sepoy under Major Edmonstone and all his cavalry. "After an absence of thirty-eight hours, during thirty-two of which he had never dismounted from his horse, he returned to camp, having completely surprised, discomfited and dispersed the enemy, and compelled them to leave behind, not only the whole of their plunder, but the few tents and light equipments with which they had entered the woods."

The urgent necessity for relieving Vellore induced the British commander to detach a force under Lieutenant-Colonel Owen,* twenty miles in advance of the main army. It consisted of a detachment of cavalry under Captain Macalister, a detachment of artillery under Captain Moorhouse, the Grenadier company of the Bengal European regiment under Captain Moore, the 24th Bengal Sepoys, the 4th, 8th, 14th and 21st battalions of Madras Sepoys and a detachment of Pioneers. The objects with which this force was detached were to command the resources of a larger extent of country, to support the friendly Poligars, and, if possible, to cut off some of the convoys for Hyder's army.

* The appointment of this officer to command a brigade was the cause of much discontent amongst the officers of the Company's service. Lieutenant-Colonel Owen's history was as follows: "When Sir Eyre Coote was appointed to succeed General Clavering as Commander-in-Chief he obtained permission to take out to India as one of his aides-de-camp a Mr. Arthur Owen. In the letter from the Court of Directors to the Government of Madras announcing this appointment it was stated that "they had granted Mr. Owen the rank of lieutenant-colonel by brevet in our forces during the continuance of the General in India, and although we do not intend that he should be appointed to any corps in the Company's troops, or supersede any of the officers of the rank of lieutenant-colonel by having the above mentioned brevet, nevertheless we desire that he do enjoy the usual pay and allowances of a lieutenant-colonel on the Bengal establishment during the time Sir Eyre Coote shall continue in command of our troops." Lieutenant-Colonel Owen accompanied Sir Eyre Coote from England to Bengal, and went with him from Bengal to Madras in November, 1780. In August, 1781, when the Bengal troops arrived, he was placed in command of a brigade, notwithstanding the orders of the Court of Directors to the contrary.

On the 22nd October the detachment was encamped in advance of a strong pass, situated between it and the main army. At daylight the following morning it was suddenly attacked by Hyder in person at the head of nearly all his regular infantry and light guns and all his select cavalry, and vigorous efforts were made for its destruction before it could either gain the pass or be succoured by the main army. Owen at once, perceiving the desperate position in which he was placed, set fire to his tents, and abandoning his baggage marched rapidly towards the pass. Just as the head of the column entered the pass the 8th Carnatic battalion, which formed the rear guard, was charged by a large body of horse and broken; its commander, Captain Walker, was killed, and one of its field pieces fell into the hands of the enemy. Captain Moore, perceiving this disaster, promptly turned, and with the Bengal Grenadiers, supported by the 20th Carnatic battalion, forced his way with the bayonet through the masses which were carrying off the gun, and brought it back in triumph. The 8th battalion rallied, and the force effected its retreat, and joined the main army without further molestation. Its casualties amounted to 317 killed and wounded, whilst those of the Mysoreans were computed by themselves to have exceeded three thousand. Captain Moorhouse essentially contributed to the safety of the detachment by the judgment with which he selected successive positions for his guns to cover its retreat. The conduct of Lieutenant-Colonel Owen, of Captain Campbell, commanding 14th battalion Madras Sepoys, and of Captains Moore and Moorhouse, was highly praised by Coote. The Bengal Grenadiers were specially mentioned in his order: "The brave and reasonable exertion of the company of Bengal Grenadiers under Captain Moore is worthy of the highest applause, and should ever be held in remembrance as a proof of the merit of that company and honorable to the corps they belong to." He concluded the report of this affair, which he sent to Government, by declaring that never, since he had been a soldier, which was then forty years, had he seen such distress in any army as then prevailed in his.

After the capture of Arcot on the 3rd November, 1780,* Hyder had allotted a large portion of his army and his best battering train for the siege of Vellore. The garrison was commanded by Colonel Ross Lang, and consisted of the head-quarters 1st battalion Madras European regiment, five and a half companies 5th battalion Madras Sepoys, and a detachment of artillery. For some time the garrison had been in the greatest distress. A little money had been received from Madras, brought by sepoys who had succeeded in making good their way in disguise. Grain had been bought in distant villages, and brought in by stealth on dark nights. Now, however, not a day's supply of grain was in store. The approaching moonlight nights and the expected

* The capitulation was signed by Captain Dupont, the Commandant, Captain Prendergast having been severely wounded. The garrison consisted of 157 of the 1st Madras European regiment, the same number of sepoys and a party of the Nawab's troops. They were permitted to depart on the condition that the Europeans should not serve again during the war.

rising of the river would decide the fate of the garrison, and Lang represented to Coote the alternative of throwing in supplies, or making a movement to cover the escape of the garrison. The exertions of the army had succeeded in collecting a small surplus stock of grain, and Coote, on the 1st November, set out for Vellore, and on the 8rd made over to the garrison a supply sufficient to last for six weeks. After the relief of Vellore Coote returned to the Pollams, taking with him Colonel Lang and the Grenadier company of the Madras European battalion.

Having been led by false information to believe that the fort of Chittoor was an intermediate depôt of provisions for Hyder, Coote appeared before the place on the 7th; it fell after a siege of four days. No grain, however, was found in the fort.* Leaving Captain Lamotte with the 9th battalion of Madras Sepoys to garrison the place, Coote returned to the Pollams. Shortly after this news reached him that Tippoo had laid siege to Tripassore, and the army at once marched for the relief of that post. The monsoon had set in, and the roads had become almost impassable. Not only did the cattle die in numbers, but many of the camp followers perished from the effects of the weather and starvation, for the scarcity of food was such that even the fighting men only received rations every other day. Tippoo abandoned the siege on hearing of Coote's approach. "In this dreadful march," wrote Colonel Pearse, "we lost 104 horses of the cavalry, about 1,000 bullocks, one elephant, some camels, and a number of men." Writing on the 27th November, Colonel Pearse says: "We are now destroying the place, and are in hopes of shortly receiving orders to go into cantonments, as we are without tents to cover us and with hardly any food to save our people from starving, for now there are not even supplies to be bought for money. All officers are five months in arrears; the men were paid up to the end of August a few days ago."

Before the end of December the enemy laid siege to Chittoor, and the fort being considered untenable, Captain Lamotte capitulated, the Mysoreans agreeing that the garrison should be allowed to go to Madras with their private property. These terms were violated, and the officers were sent to Seringapatam and the men to Bednore where many of them were found when that place was taken by the Bombay troops in 1783. This success of the enemy concluded the campaign of 1781, for destitute of provisions and crippled for want of transport the army had returned to Madras shortly after the relief of Tripassore, and went into cantonments at Poona-mallee.

The dissensions among the officers of Pearse's detachment, consequent upon the want of orders defining the relative duties of majors

* "No character of the war was more conspicuous than the almost invariable defects of Sir Eyre Coote's intelligence, with the exception of that received through Lieutenant Flint, or by means of sepoys disguised for specific purposes. This defect is frequently stated in his official correspondence, but he does not appear to have suspected that all his guides and spies were in the service of the enemy." Wilks, Vol. I, p. 497.

and captains under the new organisation, have already been related. There were, however, other causes at work which caused discontent in Coote's army. Pearse had a grievance of his own, for, when he had been appointed to the command of the troops to be sent from Bengal, he had been told that after his arrival on the coast the Bengal troops were to remain a separate division under his command. Within a week, however, of his having joined the main army the detachment was broken up and the regiments brigaded with those of the coast establishment. Pearse remonstrated, but without effect, and the Government of Madras, following up Coote's order, passed a resolution on the 1st November, 1781, by which the allowances for the separate command were taken away.*

The plan of brigading the Bengal and Madras Sepoys together did not answer. Pearse in a letter to Hastings wrote: "This dividing our sepoy has done much injury to the service; the vague assertion that they are all servants of one master is of no avail." Constant quarrels between the men of the two establishments took place. The Bengal Sepoys, all, needless to remark, up-countrymen, resented being called Bengalis by the Madras sepoy. So frequent and serious were the quarrels on this account that Coote on the 22nd September published the following order:—

"The General is much concerned to have so many reports daily of disputes between the Bengal and Coast sepoy.

"The appellation 'Bengalee,' made use of by the Coast sepoy, should be particularly explained to their men by the officers commanding the Bengal native corps as the general designation by which the sepoy of this country know those of the other establishment, and without attaching to it the same meaning as it has in Bengal.

"The General expects he will not again have occasion to address the commanding officers of the native corps on this subject, and that they will, by every possible means, promote the concord and unanimity which ought ever to subsist amongst soldiers who are to consider themselves as brothers fighting in the same cause, and to draw their swords only against the common enemy."

The new organisation of the Bengal army had largely increased the number of field officers on that establishment. No similar increase had been made in the Coast army, and the result was that many captains on the latter establishment had been superseded by Bengal officers, who had been their juniors in the rank of captain. A strong remonstrance was addressed to Coote by the superseded officers. The General admitted the justice of their complaints, but declined to interfere, chiefly on the ground that a number of officers of the King's service had been superseded and that a compliance with their request would increase the evil. He, however, wrote to the Bengal Government a strongly-worded protest against the new organisation, which had been brought into effect

* His monthly pay and allowances were as follows: Pay for a month of thirty days, Rs 300; allowance for table, Rs 4,000; batta for thirty days, Rs. 1,500; contingencies, Rs. 1,500; off reckonings, Rs. 150. Total, Rs. 7,450.

immediately after his having quitted Bengal and without his having been asked for his opinion on the measure.

For some little time before the conclusion of the last campaign Coote had been confined to his bed by severe sickness, and had at last been compelled to request that he might be relieved from the command of the army. Of the senior officers at Madras at this time Stuart, who had lost a leg at Pollilore, was incapacitated for duty, and Crawford had decided to return to England; the next senior officer was Colonel Ross Lang, who was, therefore, nominated to the command, with Pearse as his second in command.

Vellore had been provisioned by Coote up to the 15th December, and by various means Captain Cuppaye, the commandant, had succeeded in obtaining a small additional supply. This supply was now exhausted, and the relief of the place became a matter of paramount importance. The state of affairs is thus described by Pearse in a letter written on the 17th December, 1781: "I do not see how we are to effect the relief of Vellore if Hyder does his duty, as he is between us and the place with all his force; and, knowing our project, he certainly will be under no anxiety in providing for the defence of Arcot, and therefore may bring his whole force against us. We must go off without necessaries, tents, &c.; we take only light guns, and our distressed state he knows as well as we do."

"Coote is too ill to go. Colonel Lang must command; he nobly defended Vellore: not that it was attacked in form, but for a year he found ways and means to maintain his garrison and his detachment in a fort which was enclosed in another, on a hill close to Vellore and commanding it, and he repulsed Hyder in three attacks."

"If Lang commands I must be second in command. I heartily wish, however, as the case is critical, that Coote was going with us, because I believe the sepoys have an opinion of him; but if we get well through the business so much the better, as it will show them we can do without him."

To enable the army to march, and carry a sufficiency of supplies for the beleaguered garrison, it was estimated that 30,000 bullocks would be required, less than 10,000, however, were forthcoming. On the orders for the march being promulgated a fresh and serious difficulty arose. The sepoys, who were without necessaries, and had received no pay since the 1st September, refused to march. In this emergency Coote determined, at whatever risk to himself, to resume command of the army. A sum of money sufficient to pay the sepoys up to the 1st November was raised, and the discontent in a great measure subsided.

Information was just at this time received that three regiments of the King's service had sailed for India, and that on their arrival the senior officers were to have brevet rank given to them, which would make them senior to officers of the Company's service. Lang, seeing that there was every prospect of his being superseded, applied to Coote to be made a Brigadier-General. Coote refused to comply with his request, and Lang on the same day sent in his resignation of the service.

On the 4th January, 1782, the army was encamped near Tripassore, and was to commence its march for Vellore on the following morning,

At daybreak Coote's valet, on entering his master's tent to awake him, found him senseless ; medical aid was instantly called. He was found to be in an apoplectic fit, and for two hours there was but little hope of his recovery. Expresses were immediately sent to Madras, and Lord Macartney induced Lang to withdraw his resignation and to take command of the army. Coote, however, recovered, and the next morning, carried in a palanquin, set out for Vellore.

Coote reached Vellore on the 11th January, and made over to the garrison provisions sufficient to last for three months. Hyder had not ventured to seriously attack the army on its march, but contented himself with a distant cannonade. On the 13th the army commenced its return towards Madras. Hyder made an attempt to dispute its passage across a morass, but, owing to Coote's skilful dispositions, the crossing was effected with but trifling loss. On the 16th Hyder appeared in full force with the apparent intention of offering battle. Coote decided to accept the challenge, but after manœuvring for ten hours, having failed to bring on an engagement, he resumed his march, and the army reached Tripasore without further incident.

Hyder had been foiled in all his efforts to annihilate the British army. The Nairs had risen in insurrection against him throughout the whole province of Malabar. He had been disappointed in not receiving any aid from the French, and was threatened with an invasion of Mahrattas from the north. He began to despond, and determined to abandon all idea of conquering the Carnatic. In pursuance of this policy he ordered all the places he had taken to be evacuated and destroyed, and the inhabitants to migrate to Mysore with their flocks and herds. His plans, however, were suddenly changed by the arrival at Porto Novo, on the 10th March, 1782, of the long expected troops from France.

The French and the British Governments had both determined to make vigorous exertions to obtain pre-eminence on the coast of Coromandel. The French entrusted the conduct of their affairs in the East to the Marquis de Bussy,* a veteran, who thirty years before had distinguished himself at the head of a body of French troops in the Deccan. The first detachment of troops for India sailed from Brest early in December, 1781, but on the 13th of the month the transports on which they were embarked were captured by Admiral Kempenfeldt,† and in April, 1782, those

* When Coote defeated the Count de Lally at Wandiwash on the 22nd January, 1760, Bussy and twelve other French officers surrendered themselves prisoners to the British. Coote released Bussy on his parole. The Government, however, disapproved of the measure, and directed that he should be recalled and sent to Madras. The reason for this was that it had been ascertained that Lally had ordered nearly twenty officers then on parole to serve during the action. In March Bussy gave himself up to Coote, and offered to pay his ransom. Coote declined to accept it, and Bussy remained a prisoner for some time.

† On the 29th August, 1782, the "Royal George," of 100 guns, Kempenfeldt's flag-ship, when at anchor at Spithead, was caught by a sudden squall, upset, and went to the bottom with the Admiral, his crew and a number of women and children who happened to be on board. It was estimated that one thousand persons perished on this occasion. Kempenfeldt was nearly seventy years of age, and was considered one of the best officers in the service. He was the son of a Swede, who entered the British navy under James II. He followed his master into exile, but was recalled by Queen Anne.

with the second detachment were captured by Admiral Barrington. Bussy himself reached the Isle of France in June, 1782, and found that the Governor had in the previous December despatched a detachment of troops to India on board the fleet commanded by Admiral d'Orves. The Admiral died on the voyage, and the command devolved on Admiral de Suffrein. During the passage the British frigate *Hannibal* was captured, besides several merchantmen.

The French Admiral had under his command ten sail of the line, a 50-gun ship, and several frigates. He was aware that Admiral Hughes was in Madras roads, but had been led to believe that he had only four sail of the line with him. Under this impression Suffrein made for Madras, and arrived in the roads on the morning of the 15th February, 1782, hoping by one decisive blow to destroy the British squadron, and thus be in a condition to at once invest Fort St. George, both by sea and land. Hughes, however, had arrived at Madras with six sail of the line, and had subsequently been joined by six more. In anticipation, moreover, of the arrival of the French fleet a detachment of the newly-arrived 98th regiment had been distributed amongst the British ships to serve as marines.

On seeing that there were more British ships than he had anticipated, the French Admiral anchored at about noon, but at 4 o'clock the same afternoon he weighed anchor, and stood away to the southward. Hughes promptly sailed in pursuit, and during the night succeeded in re-capturing five of the British merchantmen and the *Lauriston*, a large ship, having on board a number of French officers and 800 men of the regiment de Lausanne. At daylight Suffrein, perceiving the danger to which his convoy was exposed, put his ships before the wind and bore down upon the British, and an indecisive fight ensued, which lasted till dark, when the French Admiral sailed for Porto Novo, where he landed 2,000 soldiers, including a regiment of Africans, and then sailed for Point de Galle. The British fleet at the same time sailed for Trincomalee* to refit, and this having been accomplished returned to Madras early in March.

Immediately Hyder heard of the landing of the French troops at Porto Novo he directed Tippoo, who was in command of a corps in the southern countries, to proceed thither and confer with the French commander. Shortly afterwards Hyder himself had an interview with Suffrein and de Cossigny, and was assured that the Marquis de Bussy would soon arrive with large reinforcements. It was agreed that Cuddalore should be at once reduced and prepared as a dépôt. The French accordingly marched to that place, and summoned it to surrender. The garrison was totally inadequate for the defence of its extensive works, and, favorable terms having been offered, the fort was surrendered on the 8th April without a shot having been fired in its defence.

On the 30th March Admiral Hughes sailed from Madras for Trincomalee with a reinforcement of troops and stores. On the 6th April the French fleet appeared in sight, and on the 11th a stubborn and indecisive action was fought. The loss of the British was 137 killed

* Captured from the Dutch by the fleet and a detachment of Madras troops on the 5th January 1782.

and 430 wounded, while the French owned to having had 189 killed and 364 wounded. After the engagement the latter made for Batticola, a Dutch port, and remained there until early in June, when they returned to the coast of Coromandel.

Although the reinforcements of British troops sent to India did not meet with misfortunes similar to those which befell the reinforcements despatched from France, still a variety of causes combined to prevent their rendering the aid to British interests on the coast that might have been reasonably expected. Early in 1781 a large fleet was assembled at Spithead, under Admiral Darby, for the relief of Gibraltar. Attached to it was a squadron, the destination of which was kept secret. It consisted of the *Hero* 74, *Monmouth* 64, *Romney*, *Jupiter* and *Isis* of 50 guns each, three frigates, a bomb vessel, a fire-ship and the *Kite* cutter. There were in addition several Indianmen and transports, on board of which were 3,000 troops under command of General Meadows. This force consisted of the second battalion 42nd, or Royal Highland regiment,* Lieutenant-Colonel Macleod; the 78th, or Seaforth Highlanders,† Lieutenant-Colonel the Earl of Seaforth; the 98th regiment,‡ Lieutenant-Colonel Fullarton; and the 100th regiment,§ Lieutenant-Colonel Humberstone. On the 15th March, 1781, the fleet put to sea, and after crossing the Bay of Biscay the secret service squadron, under command of Commodore Johnstone, parted company, and steered for the Cape of Good Hope.

Both the French and the Dutch obtained information of the fitting out of this squadron, and the latter power, fearing that it was intended to attack one of her colonies, besought the aid of the French. The appeal was successful, and a squadron of five ships of the line, some frigates, together with a body of troops, was hastily got together, and under command of Admiral de Suffrein|| was despatched to watch Commodore Johnstone's movements. The latter, however, after a quick passage, arrived unmolested at Porto Praya roads in the Cape de Verd Islands. The French admiral, having satisfied himself as to the destination of the British, also made for Porto Praya,

* Raised about the year 1780, formed into a separate corps, and designated 73rd Highlanders in April, 1786. It is now known as the 2nd battalion Black Watch (Royal Highlanders).

† Embodied in May, 1778. Number changed to 72nd in 1786; is now the 1st battalion Seaforth Highlanders (Ross-shire Buffs, the Duke of Albany's).

‡ Raised 1780, disbanded 1785.

§ Raised 1780, disbanded 1785. This regiment is said to have lost 39 officers and 1,200 men killed in action and died of disease during the time it was in India.

|| Pierre de Suffrein was a native of Provence. He was born in 1726, and at the age of 17 entered the navy. He joined the *Solide*, and was on board that vessel when it engaged the British ship *Northumberland*. In the action with Admiral Hawke in 1747 the ship on which he was then serving struck her flag, and Suffrein was sent a prisoner to England, but was released at the Peace of Aix-la-Chapelle in the following year. In the interval before the next war he employed himself in passing his terms for the Order of St. John of Jerusalem, of which he became a knight. On the renewal of the war he joined *L'Orphée*, forming part of the fleet sent to assist at the siege of Port Mahon. From *L'Orphée* he was transferred to *L'Océan*, and was taken prisoner in this ship, and again sent to England. He was released at the conclusion of the Seven Years' War in 1763.

where Johnstone, unconscious that he was being pursued, and perhaps trusting to the fact that he was in a neutral port, permitted his ships to anchor in an irregular manner, and took no precautions against a surprise. On the morning of the 16th April the outermost British ship descried a strange squadron approaching, and soon after it was made out to consist of French men-of-war, and signals were made to recall all men on shore. Suffrein, pushing on with his three largest vessels, firing from both sides as he advanced, was soon in the midst of the British ships. The latter, owing to their position, were only able to bring half their guns to bear on their opponents. After a short period, however, the Indiamen were able to join in the conflict, and the French got so roughly handled that they were glad to make their way out of the harbour.

After having repaired damages Commodore Johnstone in the beginning of May sailed from Porto Praya, and in the middle of June despatched Captain Pigott with three of his fastest ships to obtain information of Suffrein. Whilst on this service Pigott captured a large Dutch East Indiaman laden with stores and having £40,000 in bullion on board for Ceylon. From his prisoners Pigott learnt that Suffrein was in False Bay on the 21st June, and that several Dutch Indiamen were in Saldanha Bay, and therefore out of reach of the protection of the French squadron. Commodore Johnstone in his sealed instructions had been directed to effect the conquest of the Dutch settlement at the Cape of Good Hope, but, considering that the presence of the armament under Suffrein would prevent his effecting this object, he determined to attack the Dutch ships in Saldanha Bay. This scheme he carried out on the 22nd July, and resulted in the capture of three large ships and the burning of a fourth. After this success he sent the *Hero*, *Monmouth*, *Iris* and *Active* with General Medows and the troops to India, and returned with his prizes to England. Some little time after the departure of Johnstone for England Suffrein sailed for the Isle of France, where he arrived on the 25th October, 1781, and from whence, as we have seen, sailed in December for the coast with the fleet under Admiral d'Orves.

Of the men-of-war and troops sent on to India by Commodore Johnstone the *Monmouth*, *Hero* and *Isis*, with one transport, having on board General Medows, Lieutenant-Colonel Fullarton and four hundred men of the 98th, reached Madras on the 9th February, 1782, and took part in the first action between Admirals Hughes and Suffrein, the men of the 98th being distributed amongst the ships to act as marines. The 78th Seaforth Highlanders did not reach Madras until the 2nd April, 1782. This regiment had embarked 1,100 strong, but lost 230 men from scurvy and other causes on the voyage, and out of the 880 men that landed only 390 were fit for duty. The death of the Earl of Seaforth, who expired before the regiment reached St. Helena, threw a damp over the spirits of the men, and is said to have materially contributed to the prostration of mind which made them more readily the victims of disease. With the exception of the *Myrtle* transport the ships with the 42nd and 100th regiments reached Bombay on the 5th March,

1782. The *Myrtle*, with Lieutenant-Colonel Macleod and three companies of the 42nd on board, got separated from the other ships in a gale, and did not reach Madras until long after all the other vessels.

The British army continued in the neighbourhood of Madras until the 10th April, when it marched to Chingleput, and towards the end of the month was joined by all the men of the 78th Highlanders who were considered fit for service. On the 11th May the united forces of Hyder and the French suddenly appeared before Permacoil, a hill fort distant about twenty miles north-west of Pondicherry. Coote, on hearing of this, instantly marched to its relief, but his movements were delayed by violent storms, and he had the mortification of hearing that it had been forced to capitulate on the 16th, and that the combined forces were marching towards Wandiwash. Coote had ordered this place to be mined, so that it might be at once destroyed should such a measure become necessary. He now decided to march, and, if possible, bring the enemy to action. The allied army had been four days in sight of the place, when on the appearance of the British they withdrew, and Captain Flint, the gallant commander of the garrison, was able to make over to Coote a welcome supply of one thousand head of cattle and four hundred sheep, which with indefatigable exertion he had been able to collect before his post had been invested.

The French had suffered much from sickness, and the force which they could put into the field was still further reduced by the garrisons which it was necessary to maintain at Cuddalore and Permacoil. Bussy, moreover, had issued imperative orders that they should not risk a general action. Under these circumstances the commander of the French troops, avoiding meeting the British in the field, retired to Killanoor, distant 14 miles west of Pondicherry, where he had prepared a strongly-entrenched camp, and which Coote having reconnoitred did not deem it prudent to attack.

On the 30th May Coote marched towards Arni, which place, although it was one of Hyder's principal dépôts, had been left with a small garrison. Hyder, divining Coote's intention, on the same evening despatched Tippoo with orders to proceed by forced marches and throw a strong reinforcement into Arni, and he himself determined to follow the next day. His allies when appealed to for aid replied that their instructions would not admit of their accompanying him, and Hyder in retaliation directed that the daily supplies which had hitherto been furnished to the French should be discontinued during his absence. On the morning of the 2nd June Hyder came in sight of the British army. Just as it was preparing to encamp Coote, eager to bring on a general action, by a succession of skilfully-conceived manœuvres, succeeded in closing with his opponents. Hyder, following his constant practice of not risking his guns, immediately ordered them to retire, but the Grenadiers of the 73rd regiment and of the Madras European battalion, supported by a battalion of Bengal Sepoys, by a spirited charge succeeded in capturing one gun and eleven tumbrils. Want of cavalry prevented Coote from following the enemy

and capturing more of his guns. As Tippoo had succeeded in strongly reinforcing Arni, the General was compelled to abandon all thought of capturing that place. The loss of Europeans and natives on this day amounted, including the wounded, to seventy-four, and in this number were seventeen, chiefly men of the 78th, who died from fatigue.

Hyder, anxious to obtain some advantage over the British, devised, on the 8th June, a stratagem, which effectually succeeded. Some elephants and camels, apparently carelessly guarded, were made to pass within a short distance of the grand guard. The body of men so called acted as a personal guard to the General, and consisted of a detachment of cavalry, two light guns and 100 sepoy, and was commanded by Lieutenant Cruitzer. Seeing the elephants and camels Cruitzer determined to seize them, and sent a message to the field officer of the day, Lieutenant-Colonel James Stuart,* 78th Highlanders, to tell him of his intention. Stuart instantly mounted his horse, and rode at speed to stop Cruitzer from leaving camp. He, however, was too late, and arrived just in time to see the guard charged on all sides by crowds of cavalry. Perceiving that all was lost Stuart looked to his own safety, and escaped with difficulty, his horse leaping a ravine over which none of the enemy could follow him. The loss of the British in this unfortunate affair was 166 men, 54 horses and two guns. Elated with his success Hyder on his return to camp fired a salute in honor of his victory.

Climate and fatigue having greatly increased the number of Europeans on the sick list, Coote marched to Wandiwash, and after a halt there of four days returned to the neighbourhood of Madras on the 19th June.

The French admiral, aware that the British expected a strong re-inforcement of troops, which were being brought from England under convoy of a fleet commanded by Sir Richard Bickerton, determined to attempt the capture of Negapatam before the expected reinforcements could arrive. Admiral Hughes hearing of his intention at once sailed for that place. At noon on the 6th July Suffrein appeared before Negapatam. By 3 o'clock the British fleet had weighed anchor and put out to sea, and the next morning engaged their antagonists. The number of ships in each fleet was equal, but the British had 732 guns to 707 of the French. The fight was maintained with great

* He succeeded the Earl of Seaforth in command of the 78th. He served for many years in India with great distinction. In 1796 he was appointed commander-in-chief at Bombay, and commanded the division of the Bombay army at the capture of Seringapatam in 1799. In 1800 he went to England, but returned to Madras in the following year, having been appointed commander-in-chief of the army of that Presidency. He took the field against the Mahrattas in 1803. In 1805 he returned to England, and died in 1815. The fact of their having been two General James Stuarts has led to confusion in some of the histories of this period, the acts of the one being described as the acts of the other. When they were both together in India they were distinguished by their compatriots by the names of their paternal estates. Thus the General Stuart who arrested Lord Pigot, and was deputed by Lord Macartney, was known as Stuart of Torrance, while Stuart of the 78th Highlanders was designated as Stuart of Blairhall. Later on the latter obtained the *soubriquet* of Trimul Row (Trimul Rao), which was afterwards changed to Old Row.

resolution, and ended without either side having captured a ship. The loss of the British was 76 killed and 238 wounded, while that of the French was 168 killed and 601 wounded. After the action Hughes returned to Madras to refit, and Suffrein repaired to Cuddalore for the same purpose.

Whilst at Cuddalore Suffrein heard that two ships of the line, having under convoy a division of the Marquis de Bussy's troops, had arrived at Point de Galle. He accordingly sailed for that place on the 1st August,* and effected a junction with these reinforcements. It was not until the middle of August that Admiral Hughes heard of this junction; he at once made ready for sea, being seriously alarmed for the safety of Trincomalee. No sooner had Suffrein joined the reinforcements than he proceeded to attack Trincomalee. He arrived in back bay on the 26th, at once landed the troops and invested the place. The French batteries opened fire on the morning of the 29th, and before night had silenced those of the garrison. The following morning the place was summoned to surrender, and so eager was Suffrein to obtain possession that he granted everything the commandant Captain Hay Macdowall† could desire.

On the 2nd September Admiral Hughes arrived, and had the mortification of seeing the French colors flying from all the forts. The enemy's fleet was now superior to that of the British, and no sooner did the latter appear in sight than Suffrein put to sea to engage them. Hughes might have avoided an action, but so eager were his men for a fight that he hoisted the signal to engage at two cables distance. The action which ensued was the fourth fought by the two fleets in the year, and terminated a naval campaign unequalled by the number and obstinacy of the actions by which it was distinguished. As in the former fights neither side lost a ship. The casualties of the British amounted to 1,350 killed and wounded, whilst those of the French are stated to have been 1,100. The French returned the same night to Trincomalee, and in getting into harbour in the dark lost *L'Orient* 74, one of their best ships. So little satisfied was Suffrein

* Some little time before this period Suffrein had made a proposal to the Madras Government for an exchange of prisoners. The proposal was forwarded to Coote, who signified his concurrence, but expressed a desire that the British prisoners in the hands of Hyder, the ally of the French, should be included in the exchange. Suffrein rejected this condition. No further communications appear to have passed on the subject, and just before he sailed from Cuddalore on the 1st August, 1782, in spite of the remonstrances of several French military and civil officers, Suffrein made over to Hyder 50 officers and warrant officers, and close on 400 sailors, whom he had captured in the *Hannibal* frigate and various vessels. These unfortunate men were at once chained together two and two, and marched off to Mysore.

† He succeeded Sir John Craddock as Commander-in-Chief of the Madras army. The former had held a seat in Council with additional allowances, but the Court of Directors refused to appoint General Hay Macdowall to the vacant seat. The General remonstrated; his appeal was rejected, and a civilian appointed a member of Council in his stead. The General considered this a personal affront, and resigned his command, couching his resignation in terms strongly indicative of his mortification and disappointment. Early in 1808 he embarked for England, but the vessel was never heard of again. He was succeeded in the command of the Madras army by Sir Samuel Auchmuty, who was appointed a member of Council.

with the conduct of his officers that he sent six captains to the Mauritius to be tried by court-martial. After the action the British fleet returned to Madras.

As a further reinforcement for the British forces in India a squadron of men-of-war under Sir Richard Bickerton sailed from England on the 6th February, 1782. The ships of war were the *Cumberland* and *Defence* of 74 guns, the *Sceptre*, *Africa* and *Inflexible* of 64 guns, and the *Juno* and *Medea* frigates. They gave convoy to several transports, having on board the 23rd Light Dragoons,* Lieutenant-Colonel Sir John Burgoyne, *Bart.*; the 101st Foot,† Lieutenant-Colonel Adams; detachment 102nd Foot,‡ Lieutenant-Colonel Bruce; the 15th Hanoverians,§ Lieutenant-Colonel Reinbold; 200 recruits for the 73rd and 78th Highlanders and 500 for the Madras European regiment. The *Sceptre* and *Medea*, having got separated from the rest of the ships, steered direct for Madras, capturing on their way a French transport, having on board ninety men of the regiment of Pondicherry and a large quantity of military stores. Leaving the prize in charge of the *Medea*, the *Sceptre* continued her voyage, and reached Madras in the end of July, the *Medea* arriving two or three weeks later.

The declining state of Sir Eyre Coote's health rendering a change of air necessary he made over command of the army to Major-General James Stuart, and on the 28th September sailed in the *Medea* frigate for Bengal.

The British fleet had kept the sea throughout the monsoon of 1781; the ships were much in need of repair, and in the opinion of the Admiral it was absolutely necessary that the fleet should go to Bombay to refit. Lord Macartney, apprehensive lest the French fleet should winter at Trincomalee, and be thus at hand to co-operate with the expected army under Bussy, and also be able to intercept the supplies of grain from Bengal, urged the Admiral to risk the British fleet for the purpose of covering an attempt on Cuddalore, and thus decide the war

* The first British cavalry regiment that ever came to India, raised in 1781, renumbered the 19th in 1783. It served with great distinction in India until October, 1806, when it embarked at Madras for England, where it landed in April, 1807. When first raised its uniform was scarlet, but in 1815 was changed to blue with yellow facings. It was disbanded as the 19th Lancers in 1821.

† Raised in 1780, disbanded in 1784.

‡ Raised in 1780, disbanded in 1784.

§ Two regiments of Hanoverians were raised in 1781 for service in India. They were numbered the 15th and 16th; the former was commanded by Lieutenant-Colonel Reinbold, the latter by Lieutenant-Colonel Wagenheim. By the terms of their agreement they were to be on the same footing, with regard to pay, rank, and duty, as H. M.'s regiments in India. Each regiment to consist of ten companies, viz., eight Fusilier companies, one Grenadier and one Light. The staff of each regiment to be 1 lieutenant-colonel, 1 major, 1 captain-lieutenant, 1 adjutant-major with the rank of lieutenant and 1 with the rank of ensign, 1 judge with the rank of lieutenant, 1 chaplain, 1 surgeon, 2 cadets, 5 surgeons' mates to rank as sergeants, 1 drum major as sergeant, 4 musicians as corporals, 1 armourer, 1 provost as private. Each company to consist of 1 captain, 2 lieutenants, 1 ensign, 3 sergeants, 1 clerk, 3 corporals, 2 drummers, 12 lance-corporals and 74 privates. Two guns to be attached to each regiment, for the working of which 1 sergeant, 2 corporals and 12 canoneers were to be provided. All ranks to agree to serve for seven years. The regiments to be governed by their own martial law, and in the manner prescribed by the Ordinances of the Electorate.

before the arrival of the French commander. The Admiral, however, declared that it was imperatively necessary for the ships to proceed to Bombay, and accordingly sailed on the 15th October. Twelve days after his departure Sir Richard Bickerton arrived, and having landed the troops he had brought from England sailed to join Admiral Hughes at Bombay.

On the 30th of the month the detachment of the Bengal European regiment embarked for Calcutta, and was thanked in General Orders for the eminent services they had rendered during the campaign.

Hyder,* whose health had been rapidly declining for some time past, expired on the 7th December, and was succeeded in the throne of Mysore by his eldest son Tippoo, better known to English readers as Tippoo Sahib. Tippoo was at this time on the western coast, and Lord Macartney urged General Stuart to take the field before he could return; but Stuart, at first professing to disbelieve the report, and afterwards acting with indecision, Tippoo was able to join his army at Chumkaloor in south Arcot on the 2nd January, 1783.

On the 5th January the army was formed into two lines; the first, under Lieutenant-Colonel Reinbold of the 15th Hanoverians, consisted of three brigades.

First brigade, commanded by Lieutenant-Colonel James Stuart: H. M.'s 78th Regiment, H. M.'s 73rd, 78th and 101st Foot, detachment 15th Hanoverians, and the Madras European infantry.

Second brigade, commanded by Major Edmonstone, Bengal army: 12th and 25th Regiments Bengal Sepoys, and 8th Carnatic battalion.

Third brigade, commanded by Major Blane, Bengal army: 13th Regiment Bengal Sepoys, the Trichinopoly detachment, and the 16th Carnatic battalion.

The second line, under Lieutenant-Colonel Pearse† of the Bengal artillery, consisted of the 4th and 5th brigades, *viz.* :—

Fourth brigade, commanded by Lieutenant-Colonel Kelly, Madras army: 24th Regiment Bengal Sepoys, the 14th, 18th and 21st Carnatic battalions.

Fifth brigade, commanded by Lieutenant-Colonel Elphinstone: H. M.'s 73rd Regiment, 26th Regiment Bengal Sepoys, 4th, 15th and 16th Carnatic battalions.

Four regiments of native cavalry under Lieutenant-Colonel Dugal Campbell were also present with the army. No details regarding them are given in the orders.‡

The artillery consisted of the battering train, and of twelve 12-pounders and thirty 6-pounders, distributed amongst the several brigades.

* Hyder Ali was born in 1722, and was thus nearly sixty-one years of age when he died. He had reigned nearly twenty-two years.

† In May, 1782, Pearse obtained leave to proceed to Bengal, both to recruit his health and settle his accounts. Towards the end of July he sailed from Calcutta in a snow in charge of 20,000 pagodas for Madras; he reached Ganjam on the 31st August, and after some unavoidable detention proceeded from thence by land with the money to Madras, where he arrived on the 5th December, 1782.

‡ It is known that the regiments were very weak; those in camp in January 1781, did not number more than 200 men in each regiment.

Besides these there were the Bengal and Madras parks, each consisting of two 18-pounders, four 6-pounders and two howitzers.

Sir Eyre Coote had been invested by the Governor-General in Council with powers which made him almost independent of the Government of Madras in all matters connected with the conduct of the war. General Stuart imagined that with the command of the army similar powers had devolved upon him. This was denied by Lord Macartney, who insisted on assuming the direction of the campaign, merely assigning to the General the execution of his orders. Stuart, not content with expressing his disapproval of the scheme of operations proposed by the Governor, denied that the civil authority had any power over the King's troops. Both the General and Lord Macartney were men of unbending dispositions, and much valuable time was wasted in their unseemly squabbles. The General, however, having acquiesced in the advisability of destroying the forts of Carangooly and Wandiwash, at length marched from Madras for the purpose of carrying out this measure. The greater part of February was employed in the demolition of these two forts, and while in the neighbourhood of Wandiwash, Stuart offered battle to the combined French and Mysorean army. The challenge, however, was not accepted.* In the beginning of March Vellore was re-occupied without opposition, Tippoo, on hearing of the capture of Bednore by the Bombay troops under General Matthews, having gone off with the greater part of his army to oppose that officer.

When intelligence reached Calcutta of the disputes between Lord Macartney and General Stuart, it was universally felt that Coote's return to Madras was necessary to avert disaster. The General was broken in body, and somewhat feeble in mind, "yet," wrote Hastings, "he is our only resource, and his presence would yet retrieve the miserable state of the Carnatic, even though he himself should be deprived of motion. He is willing, and sometimes impetuous, in his resolution to return thither." The General wished to return to Madras in the *Medea*, the frigate in which he had sailed to Calcutta; but for some reason or other this could not be arranged, and on the 7th March he embarked on board the armed ship *Resolution*. Ten lakhs of rupees, of which Coote was to have the control, were also shipped on board that vessel, and instructions were at the same time sent to the Government of Madras to allow him the uncontrolled command and conduct of the army.

The French admiral, aware of Coote's plans, kept four of his fastest sailing ships cruising about to intercept him. They fell in with the *Resolution*, and chased her for four days and four nights, sometimes getting close up to her. The General's anxiety was so great that

* The following general order was issued on the 15th February from Wandiwash after the enemy refused to fight:—

"It is supposed that the enemy, who would not stand to fight, will endeavour in a cowardly manner to annoy the army in the next march; perhaps they may throw some distant cannon shot and rockets as usual. The General will give five pagodas for every rocket boy taken by the flanking parties."

he took no rest, but remained almost perpetually on deck watching his pursuers. He frequently fainted, and at last, fairly worn out by fatigue and anxiety, was carried to his cabin. As the *Resolution* neared Madras the enemy abandoned the chase, and the good ship reached her destination on the 24th April. Sir Eyre Coote was taken on shore in a dying state, and expired two days after his arrival.*

* Sir Eyre Coote was born in Ireland in 1726, and having adopted the army as his profession served in the suppression of the rebellion in 1745, but in what regiment is not certain. In 1754, however, he was a captain in the 39th Regiment, and sailed with that corps for India. The regiment reached Madras before the end of that year. On news of the capture of Calcutta by the Nawab Suraj-ud-daula in June, 1756, reaching Madras, it was decided to send an expedition to Bengal to recover Calcutta and restore the credit of the British nation in that province. Colonel Robert Clive was selected to command the expedition, of which three companies of the 39th formed a part. One of these companies was commanded by Captain Eyre Coote. He took a prominent part in the operations leading to the retaking of Calcutta, and especially distinguished himself at the capture of Chandernagore from the French in March, 1757. Clive immediately before the battle of Plassey in June of the same year assembled a council of war, and submitted to the council whether it would be prudent to come to action at once, or whether it would be more prudent to entrench the army and wait until the monsoon was over, when possibly the Mahrattas might be induced to join the British. Contrary to custom Clive gave his vote first, which was against coming to action, and in this opinion he was supported by twelve of the members. Coote, who had recently obtained the local rank of major, warmly espoused the opposite view, and was supported by six others. Clive subsequently reconsidered his decision and decided to fight at once. A month after the action Coote was sent from Murshidabad in command of a force of 223 Europeans and 500 sepoys to overtake and attack a body of French under M. Law. The French however retreated, and Coote followed them as far as Chupra, where he ascertained that the French were at Benares. As further pursuit would have led him into the territories of the Nawab of Oudh, Coote did not deem it prudent to proceed any further, lest the British should become involved in hostilities with the ruler of Oudh. The detachment accordingly returned to Murshidabad. In 1758 the regiment was ordered to return to England, such of the officers and men as desired being permitted to volunteer for the Company's service. Coote returned to England, and early the following year was selected to raise a regiment for service in India. This regiment was numbered the 84th, and being formed by drafts from old corps was speedily completed, and by the end of October, 1759, the whole regiment had landed at Madras. The position of affairs on the coast was as follows: On the 17th February, 1758, Lally had been compelled to abandon the siege of Madras, and preparations were at once made to recover the districts which had fallen into the possession of the French. But little progress, however, had been made up to the time of Coote's arrival. He at once assumed command of the army, and commenced active operations. The fort of Wandiwash was taken on the 29th November, and Carangooly on the 10th December. On the 22nd January, 1760, Coote defeated Lally near Wandiwash; the victory was decisive, the enemy having been driven off the field with a loss of 23 Europeans killed or mortally wounded and 160 prisoners, amongst whom was Brigadier-General Bussy and twelve other officers. The forts of Chittapet, Timiri and Arcot were taken in the following month. The rock fort of Permacoil was carried by assault on the 5th March (see p. 145, No. 55 of this Journal). On the 5th April, the fort at Karikal was captured, and in it were found 155 guns, 9 mortars and a large quantity of military stores. Before the end of the year siege was laid to Pondicherry, and on the 15th January, 1761, the place surrendered at discretion. Shortly after this Coote returned to England. On intelligence of the death of Sir John Clavering reaching England Coote was appointed Commander-in-Chief in India. He arrived at Madras in December, 1773. Before leaving England he had been nominated a Knight of the Bath, and the insignia of the order was sent to the Nawab of the Carnatic with full instructions for the investiture of the General. Sir Eyre Coote was accordingly invested with the insignia by the Nawab. Sir Eyre landed at Calcutta on the 23rd March, 1779, and, as we have seen, sailed

The operations to be undertaken against Cuddalore were necessarily dependent on the return of the fleet from Bombay. Before that event Suffrein had captured a number of vessels from Bengal laden with rice, but anticipating that Admiral Hughes would return sooner than he actually did, leaving a few cruisers to intercept the grain ships from Bengal, he sailed for Trincomalee. Here he met the Marquis de Bussy with the last of the reinforcements from France, and without delay escorted him to Cuddalore, and then returned to Trincomalee to refit, and in the evening of the day he entered the harbour; he saw the British fleet making its way to Madras.

Having concerted measures with the Admiral, Stuart on the 21st April commenced his march towards Cuddalore. He advanced slowly, and had been much blamed for the dilatoriness of his movements; but, as Sir Thomas Munro has pointed out, he arrived at Cuddalore as soon as his store ships, and that his arriving there a month sooner would have been of no use, as his entrenching tools and heavy guns were on board these ships. Approaching Cuddalore from the north Stuart, when within an easy march of that place, made a circuit behind the Bandipollem hills, and on the 7th June took up a strong position two miles south of the fort, with his left resting on the Bandipollem hills and his right on a backwater close to the sea. The army was drawn up in two lines; the first consisted of the 1st, 2nd and 3rd brigades under Colonel Stuart, H. M.'s 78th regiment, and the second, under Colonel Gordon, H. M.'s 101st regiment,* of the 4th and 5th brigades. The next few days were employed in landing the heavy guns, entrenching tools and ammunition, and also a detachment of the 16th Hanoverian under Colonel Wagenheim.

Owing to the various misfortunes which had befallen the troops sent from France, the French commander now found himself at the head of a force, probably less than a fourth of the number he had hoped to have had under his command. The Mysore army, too, on whose co-operation he had counted, had moved to a distant country. According to French authorities the force under Bussy's orders amounted to no more than 2,300 Europeans and 5,000 natives. Seeing the position Stuart had taken up on the 7th, Bussy the same night commenced to construct a line of defence one thousand yards in front of the fort and running from the Bandipollem hills on the right to the backwater on the left. This defence consisted of a trench and parapet with three

from thence in October, 1780, to take command of the troops in the field against Hyder Ali, and his subsequent career is fully detailed in the text. Coote's body was taken to England and interred in the parish church of Rockwood in Hampshire, and a monument was erected to his memory in Westminster Abbey.

* On the 20th April an order from England had been published granting superior local rank to the field officers of the King's troops. By this order Pearce was superseded by Lieutenant-Colonels Stuart and Gordon, and was removed from the command of the second line in favor of the latter officer. Pearce strongly protested against this act, as the second line was composed entirely of Company's troops. General Stuart declined to reconsider his order, which was in violation of the instructions of the Court of Directors, who in a despatch, dated 7th February, 1781, had desired that the command of their troops should be preserved to their own officers.

redoubts and several batteries. These works were becoming so formidable that at a council of war held in the British camp on the 12th June it was determined to assault them without delay.

In the course of the afternoon the enemy's lines were reconnoitred by Lieutenant-Colonel Kelly of the Madras European regiment, who, making his way through some thick jungle on the Bandipollem hills, gained a spot from whence he had a complete view of the interior of all the entrenchments on the right of the line of defence. Stuart on receiving Kelly's report determined to assault these works on the following morning.

The arrangements for the assault were as follows : Lieutenant-Colonel Kelly, with a detachment of artillery and eight field pieces under Major Mackay, the Madras European regiment and the 5th, 18th and 21st Carnatic battalions, was to leave camp before midnight, and following the same route as he had taken in his reconnaissance gain the right flank of the enemy's advanced works before daylight. The corps of European Grenadiers under Lieutenant-Colonel the Hon. Charles Cathcart,* H.M.'s 73rd regiment under Captain Lamont,† the 18th Bengal Sepoys and the 16th Carnatic battalion formed the left attack, and was commanded by Colonel James Stuart, H. M.'s 78th Regiment. The centre attack was entrusted to Major-General Bruce. The troops under his command were H. M.'s 101st regiment, detachments 15th and 16th Hanoverians, 25th Bengal Sepoys, the Trichinopoly detachment and three companies of the 20th Carnatic battalion under Lieutenant Desse, Major Edmonstone with H. M.'s 78th regiment, the 12th Bengal Sepoys and 8th Carnatic battalion was posted on the British right to act as circumstances might require.

Kelly had noticed a little hill, which the enemy had not occupied and from whence their works could be enfiladed. Marching from camp at the appointed time he sent Major Mackay with the field pieces and some sepoys and pioneers to take possession of this hill, Kelly with the main body of his brigade remaining behind the hill. At daybreak Mackay opened fire from his guns on the enemy's nearest post, which was held by some Mysoreans, who instantly took to flight, abandoning their guns. Kelly at once pushed on, and drew up his Europeans in rear of the abandoned work. Owing to the difficulty of the road he was not at once joined by the sepoys of his brigade. Without waiting for them he

* Lieutenant-Colonel the Hon. Charles Cathcart, 98th Regiment, born December, 1759, and obtained a commission at an early age. He served in America, and while on his voyage home to England was captured by a French privateer. When the 98th Regiment was raised he was appointed major, and sailed with it for India, and on the 20th April, 1783, became a local lieutenant-colonel. On the 11th June the Grenadier companies of the 73rd, 78th, 101st, 1st Madras European regiment, and detachment of Hanoverians were formed into a Grenadier corps, and placed under his command. After the conclusion of peace he was sent home with despatches, and as a reward for his services was appointed quarter-master-general of the King's troops in India, and the Court of Directors voted him a sword of the value of one hundred guineas. In 1788 he was sent on a mission to China, but died on board the *Vestal* frigate in the Straits of Sunda, on the 10th June, in the twenty-ninth year of his age.

† Numbering under 500 men.

continued his advance, and the enemy, thoroughly taken by surprise, retreated to the nearest redoubt.

On hearing of Kelly's success the left attack was ordered to advance to his support, and by a little after 8 o'clock the corps of Grenadiers took up a position in front of Kelly's brigade and facing the enemy's right redoubt. They did not, however, reach this spot without loss, for the enemy brought a heavy fire from the redoubt to bear upon them in their advance. The guns from a British battery now opened upon the redoubt, and soon silenced its fire. The Grenadiers then advanced to storm the redoubt, but the French, again standing to their guns, poured volleys of grape into their assailants, and forced them to retire. Colonel Stuart reached the entrenchment just after the repulse of the Grenadiers, and sent to tell the General how matters stood.

On receiving this report General Stuart decided to make two simultaneous attacks on the redoubt, one on its front and the other on its right face. The former was to be undertaken by the troops under Major-General Bruce and the latter by those under Colonel Stuart. The Europeans of both parties were to advance without their guns, and Major Mackay was directed to bring his guns to bear upon the redoubt for three minutes, when the signal for the advance was to be given. On the signal being given the troops for the front attack moved forward in the following order, commencing from the right : the 25th Bengal Sepoys, four companies H. M.'s 101st Regiment, the Hanoverians and the three companies 20th Carnatic battalion under Lieutenant Desse,

The advance was over heavy sand, and the 101st had to pass through a grove of palmyra trees, and as the leading files emerged from the grove, at a distance of two hundred yards from the redoubt, they were greeted with a hot fire from the enemy's guns, whilst their infantry, who had lined the entrenchment to the right and left of the redoubt, reserved their fire until the British were within a hundred yards, and then gave them a volley, followed by a second when they had advanced some thirty yards closer. The Hanoverians now halted, fired a volley, and then the greater portion of them ran away. Two companies of the 101st were still in the palmyra grove ; they were seized with panic, and joined the Hanoverians in their flight, and broke through the reserve. The flank company of the 101st, however, continued its advance, and many of the men were killed at the foot of the redoubt.

The French, sallying out of the entrenchments and redoubt, dispersed the few Hanoverians who still stood by their officers, followed them up to where the 101st had been rallied, broke the latter, and drove both the Hanoverians and British through the sepoy reserve, and continued the pursuit for a quarter of a mile. Here, however, a stand was made, and the French forced to retire. The three companies of the 20th Carnatic battalion had retired in disorder at the same time as the Hanoverians, but had rallied. The French in their ardour to pursue the British had left no troops in the redoubt, and Lieutenant Desse, perceiving this, advanced and took possession of it.

It had been intended that the redoubt should have been attacked simultaneously by the troops under Major-General Bruce and Colonel Stuart, but from some misunderstanding the latter did not advance until Desse was in possession of the redoubt. On reaching the redoubt he ordered that its gorge should be closed and its defences reversed, and then, rapidly advancing with the Europeans on the right and the 13th Bengal Sepoys and 16th Carnatic battalion on the left, drove the enemy from the adjacent parts of the entrenchment. The French, however, soon rallied, and taking cover behind some sand hills galled the Grenadiers and 73rd with their musketry, while four field pieces poured grape into the redoubt, the gorge of which had not as yet been closed. At last the Europeans, falling fast, and overcome with heat, fatigue and want of water, gave way and retired in disorder.* Their sepoy kept their formation, and fell back steadily. The firing on both sides then slackened, and between four and five o'clock entirely ceased.

Thirteen guns and the key of the enemy's outworks remained in the hands of the British, and the abandonment by the French of all their outworks during the course of the evening evinced their sense of the result of the operations of the day; but the fact that they were permitted to withdraw all their heavy guns unmolested attests how exhausted the British were by their victory. The troops on the right under Major Edmonstone had in front of them the regiment of Aquitaine, supported by artillery; these two forces contented themselves with keeping each other in check, and neither could send reinforcements to any other part of the field. The loss of the British this day was 613 Europeans and 852 natives killed and wounded. Amongst the killed was Lieutenant Durie of the 25th Bengal Sepoys, and Colonel Pearse was severely wounded in the thigh.

Towards the close of the day the French fleet had appeared in sight. Admiral Hughes, who was anchored about eleven miles south of Cuddalore, at once set sail in order to interpose his ships between those of the French and that place. The British fleet was superior to the French in that it had sixteen ships of the line and two of 50 guns against eighteen vessels of all classes of the latter. Scurvy, however, had made such havoc among the British seamen that their ships were but poorly manned,† whilst those of the French had their crews complete. On the morning of the 16th Hughes moved from off Cuddalore, hoping to be able to bring the French to action, but Suffrein, manœuvring with great skill, avoided a conflict, and by half past eight in the evening succeeded in anchoring precisely in the same place from which Hughes had sailed in the morning.

After a brief consultation between the French commanders it was decided that an attempt should be made to cripple the British fleet,

* The casualties in the 73rd this day were: Captains Alexander Mackenzie and the Hon. James Lindsay, Lieutenants Simon Mackenzie and James Trail, four sergeants and eighty rank and file killed, and Captain John Hamilton, Lieutenants Charles Goorie, David Rannie, John Sinclair, James Duncan and John Sutherland, five sergeants and one hundred and seven rank and file wounded.

† Wilks, quoting from the annual register, says that in the healthiest ships were 70 to 80 men laid up with scurvy, and in others double that number.

so that it should no longer be a cause of apprehension, and thus permit of men being landed from the ships to aid in the defence of Cuddalore. The French general, calculating that the approaches of the besiegers could not be pushed on with a rapidity that would cause him immediate anxiety, embarked twelve hundred troops on board the ships during the night of the 17th. Thus largely reinforced Suffrein sailed to bring the British fleet to action. After a series of manœuvres the fleets engaged at about four o'clock on the afternoon of the 20th; at seven the French hauled off, and at daylight the following morning were out of sight. The British had lost 91 killed and 431 wounded, and the spars of many of the ships were much damaged. Hughes, desirous of renewing the fight, went in search of the French fleet, and on the 22nd discovered it at anchor in the roads off Pondicherry. He anchored in sight of the French fleet, hoping it would come out and engage him, but Suffrein would not quit his position. The sickly state of his crews, the damaged condition of his ships and want of water at last compelled Hughes to sail for Madras, and no sooner had he left than Suffrein returned to his position off Cuddalore, and not only relanded the troops he had taken on board, but disembarked two thousand four hundred men from the fleet.

Before leaving Madras General Stuart had stated that he considered the army under his command sufficiently strong to reduce Cuddalore. At the same time he solicited a discretionary power over the army operating in the south. This latter force had been under the command of Colonel Lang of the Madras army, an old and experienced officer, but early in May he was superseded by Colonel Fullarton, H. M.'s 98th Regiment,* recently promoted to the rank of colonel by brevet, and who, by virtue of this brevet and agreeable to the rules then in force, took precedence of all colonels of the Company's service. Stuart's application had been reluctantly acceded to, and on the express understanding that it was only to be exercised in case of necessity. Before reaching Cuddalore, however, and without communicating to Government what he had done, Stuart ordered Fullarton to cross the Koleroon and there await further instructions. After the action on the 13th Stuart had directed Fullarton to join him without delay; the latter officer had received peremptory orders from the Government of Madras to employ the troops under his command on another duty. Having heard, however, of the disembarkation of the men from the French fleet, and that the British troops were harassed with the duty in the trenches, Fullarton decided to march with all possible expedition to join General

* Colonel William Fullarton entered the army as a lieutenant-colonel. He had been private secretary to Lord Stormont at Paris, and afterwards obtained a seat in Parliament. In 1780 some new regiments were raised, and he was appointed lieutenant-colonel of one of these, the 98th. The raising of these regiments, and the manner in which officers had been appointed to them, led to acrimonious debates in both Houses of Parliament. Lord Shelburne, after having said that the new regiments might be employed in buccaneering, and possibly against the constitution, referred to the appointment of Lieutenant-Colonel Fullarton, whom he designated as a mere "*commis*." For this speech he was challenged by Fullarton; they exchanged shots without effect; on a second discharge Lord Shelburne, who fired in the air, was slightly wounded in the groin. He expressed his willingness to receive another fire, but Fullarton declared himself satisfied.

Stuart, "conscious," as he wrote to the Madras Government, "that the public safety could have no existence if his army were defeated."

No sooner had Bussy been reinforced by the men landed from the ships than he determined to make a vigorous sortie. For this purpose three columns were formed; two of these, however, were apparently only intended for false attacks to divert the attention of the British. The real attack was to be made by a column consisting of one thousand picked men under the Chevalier de Damas, Colonel of the regiment of Aquitaine.

The British approaches had at this time been carried to within eight hundred yards of the fort. A road to the fort ran through the British lines, and they had not only neglected to carry their trench across the road, but had taken no precautions to block the opening. The French commander had noticed this neglect, and Damas was ordered to make for the opening, and if possible get in rear of the British works. Two hours before daybreak on the 25th the Chevalier moved out from the fort, and advanced quietly but rapidly towards the British trenches, and a part of the column succeeded with but slight opposition in passing through the opening and getting in rear of the besiegers. This part of the trenches was manned by the 24th Bengal Sepoys, commanded by Captain James Williamson, and on them the brunt of the struggle fell. Early in the fight the colors of the 24th were captured by the French. The men fought gallantly, the front rank manning the parapet, while the rear rank opposed the French who had got in their rear, and many of the French fell by the bayonets of the sepoys. The British troops in rear promptly turned out, but it was still dark, and much confusion and wild firing ensued. A party of Grenadiers, however, made for the opening, and effectually closed it. Just at this time some drummers, nobody knew by whose orders, beat the Grenadiers march, and the whole British army being roused the French attempted to retreat; but the Grenadiers, drawn up on the road, barred the return of those who had got in rear of the trenches, and forced them to lay down their arms, while the troops in the trenches, sallying out, pursued the rest of their assailants up to the fort. The loss of the French was estimated by General Stuart at four hundred and fifty, and Wilks, the historian, says that he does not think that this estimate was too high. The French, however, only admitted a loss of eighty taken prisoners and twenty killed, but as one hundred and fifty prisoners remained in the hands of the British no reliance is to be placed on the French returns. Amongst the prisoners were the Chevalier de Damas and Bernadotte, afterwards King of Sweden, but at this time a sergeant in the regiment of Aquitaine. The loss of the British was trifling. Major Cotgrave of the Madras army was killed, and three officers were returned as wounded and missing; twenty rank and file, chiefly sepoys, were killed and wounded. The 24th not only recaptured their colors, but took two from the enemy. Lieutenant David Ochterlony* of this regiment was wounded and taken prisoner by the French.

* Afterwards well known in Indian history as Major-General Sir David Ochterlony, Bart., G.C.B.

Inclusive of the sailors landed from the fleet the besieged now outnumbered the besiegers. Sickness and fatigue, moreover, had so reduced the British force that Stuart was unable to invest Cuddalore, and Bussy, with the help of his Mysorean allies, was able to keep up communication with every part of the adjacent country except that actually held by the British troops. Considering that the sortie had failed merely owing to errors incident to operations undertaken in the night, he determined, after allowing his assailants a few more days for the exhaustion of their strength, to march out in force by a circuitous route and attack them in rear.

Stuart was fully alive to his critical position ; his men were overworked, provisions were not only scarce but bad, and with the exception of the gun bullocks killed in action but little meat was to be procured. In his correspondence with the Madras Government he complained bitterly of their silence on every subject, above all relative to the succours he had applied for, both from Madras and from the south. Private letters from Fullarton's camp, moreover, had been received saying that his orders to that force had been countermanded by the Madras Government, and that it had been directed to proceed in another direction. The outlook was gloomy in the extreme ; the retreat of the force with the loss of its battering train was the most favorable result that could be anticipated.

Admiral Hughes was preparing to engage Suffrein* for the sixth time, when news reached Madras that preliminaries of peace between Great Britain and France and her allies had been signed at Versailles on the 1st January. Lord Macartney at once despatched Mr. Sadlier, the second member of council, and his private secretary Mr. Staunton in the *Medea* frigate to Cuddalore to inform Bussy of the treaty of peace between the two nations, and that the commissioners were charged with instructions to the British army to abstain from further hostilities. No information relative to the peace was sent direct to Stuart, and the French would permit no communication between the frigate and the shore.

Stuart, indignant at the neglect with which he had been treated, wrote on the 1st July, complaining that the *Medea*, with her cartel flag flying, was anchored in the midst of the French fleet. "They continue their working parties," he wrote ; "we fire upon them, and they return the compliment as usual. No message of any sort has been sent to us, and, though I am Commander-in-Chief and a member of your Government, I neither have any communication, nor have I had any communication later than the 17th June, and yet there are twenty letters in camp as late as the 25th." The chief difficulty

* On his return to France Suffrein was received with distinguished honors. Medals were struck to commemorate his fame, and, when he went to the palace to pay his court to the King, he was received with special honors. He was made Chevalier des Ordres du Roi, and the dignity of Vice-Admiral was expressly created for him for his life. He died about the year 1792. In view of recent events it is interesting to note that Suffrein strongly advocated the formation of a French settlement in Pegu, as he considered that the British in India could be attacked from that quarter with the best chance of success.

which the commissioners experienced arose from an attempt by the French to procure a cessation of hostile movements on the part of the British against Tippoo before it was known whether he would consent to a proposed armistice for four months. This point was at last settled, and the commissioners landed on the 2nd July and announced the cessation of hostilities to General Stuart, and then re-embarking sailed the following day for Madras to submit their report to Lord Macartney.

The Government of Madras approved of the arrangements made by the commissioners, and sent a copy of a letter to that effect to all officers commanding troops in the field except General Stuart. He was directed to make over command to Major-General Bruce, and to return to Madras to explain his dilatory conduct of the campaign, his alleged interference with the force under Fullarton and other matters. Stuart at first declined to make over command, but at last issued an order making over command of the Company's troops to General Bruce, but retaining that of the King's troops to himself, and having done this set out for Madras.

Fullarton had arrived within three forced marches of Cuddalore when he heard of the cessation of hostilities. He now halted, and shortly afterwards received orders to return to the south.

All arrangements, consequent upon the peace having been satisfactorily settled, the heavy guns and stores were embarked for Madras, and the troops commenced their return march to the same place. While the army was on the march General Bruce's health compelled him to quit the camp, and ultimately to embark for England. On the arrival of the army within a short distance of the Mount, Major-General Sir John Burgoyne arrived in camp and assumed command. The disputes between General Stuart and Lord Macartney continued daily to increase in bitterness, Stuart denying that the latter had any authority over the King's troops. At last Stuart's conduct became so violent that Lord Macartney had reason to believe that an attempt would be made to arrest and depose him as had been done with Lord Pigot in 1776, and in which arrest Stuart had been one of the principal actors. He, therefore, took the extreme step of dismissing Stuart from the Company's service.

Stuart's dismissal was notified to the army on the 17th September, and the order concluded with directing Major-General Sir John Burgoyne as the senior officer of His Majesty's service on the coast to assume command of the King's troops. General Stuart refused to give up the command, and Burgoyne informed Government that he would continue to obey him. It was, therefore, decided to arrest Stuart before he could commit any overt act; he was accordingly arrested the same day by the fort adjutant and a party of sepoy, and conveyed to the fort. At the same time Colonel Ross Lang, of the Company's service, was promoted to the rank of lieutenant-general, and directed to take command of the troops in camp. The major-generals of the King's service, however, refused to obey him. An order was then issued by Lord Macartney explaining the legality of the appointment, and calling

upon all officers of inferior rank to obey the newly-created lieutenant-general.

Soon after reaching the camp Lang ordered that the army should march the following day. Upon this the King's troops withdrew their orderlies from the adjutant-general's office. The brigade-major refused to go for orders, and the officers said their men should not move. Burgoyne sent a letter to Lang asking him to postpone the march until he had time to consider. Lang refused to comply with this request, and Burgoyne with three or four senior officers left the camp at midnight without permission. Lieutenant-Colonel Mackenzie, H. M.'s 73rd Regiment, went to Lang early the next morning, and said that he was ready with His Majesty's troops to obey his orders, and the army accordingly marched. A few days after Major-General Campbell, 36th Regiment, and Major-General Oyle, 52nd Regiment, two of the officers who had quitted camp with Burgoyne, tendered their services, having been satisfied that the authority of General Stuart over the King's troops only existed by virtue of his commission from the East India Company.*

Shortly after Stuart's arrest it had been decided to send him to England, and on the 14th October he was put on board the *Fortitude* packet, his cabin having been fitted up with every possible convenience and wines, livestock and stores of every kind shipped for his use on the most liberal scale.† Burgoyne now assumed the separate command of the King's troops, and this assumption was not opposed. However he soon commenced issuing orders in direct opposition to Government, and persisting in this conduct he was placed in arrest on the 31st

* Some idea of the feeling which existed at Madras at this time may be gathered from the following extracts of letters written by Colonel Pearse of the Company's and Colonel Fullarton of the King's service. The latter officer was an intimate friend of Lord Macartney's, and was his second in the duel he fought with General Stuart on his return to England. Pearse in a letter to a friend says: "In regard to the seizure of Stuart, when he wanted to set the King's and Company's troops at variance, Macartney is absolutely right; so I have told Hastings, and so I think he was in dismissing him. If he had not been seized there would have been a civil war here." Colonel Fullarton wrote: "Sir John Burgoyne succeeded as Commander-in-Chief of the King's troops. He asserted powers and privileges that the Government declared to be incompatible with the constitutions of the Company. He persisted, and was superseded by a colonel on the Company's establishment, who, on this occasion, was raised to the rank of lieutenant-general and commander-in-chief upon the coast. Sir John Burgoyne, in consequence of this promotion, claimed the exclusive command at least of the King's troops, and was arrested. Another general became senior of the King's service, and submitted. The remaining generals had signed a remonstrance against the violation offered to the royal service by the arrest of their commanders. Some of them adhered to their declarations and left the country; others, pliant to the times, enjoyed the benefits of unservicable, but not unprofitable, stations."

† Shortly after Lord Macartney's return to England he was challenged by General Stuart. They met on the 27th June, 1786; Colonel Fullarton was his lordship's second, and Colonel Gordon, General Stuart's. Lord Macartney was slightly wounded. General Stuart called out, "This is not satisfaction," and asked if his lordship could not fire again. Lord Macartney replied that he would try to do so with pleasure. The seconds, however, refused to allow the duel to be continued. It was said that General Stuart meditated renewing the dispute at a future time, but further proceedings were stopped by a special injunction from the King.

December, 1784,* and the command of the King's troops devolved on Major-General Allan Campbell.

While the senior officers of the King's service were disputing with Government the officers of the Company's service had a serious grievance of their own. When the 39th Regiment was sent to India in 1754 it was stipulated that the officers of the regiment should take precedence of the officers of the Company's service of the same rank. The same stipulation had been made when other regiments were sent to India. Irritating as was this supersession the senior officers were now subjected to a still more galling supersession by the granting of brevet and local rank to all the field officers of the royal service. The order for this rank was promulgated the day before the army marched for Cuddalore. Pearse was the first to suffer, being removed from the command of the second line, the command of which was given to Colonel Gordon, H. M.'s 101st Regiment, who obtained the rank of colonel under the new order. There were but few field officers on the Madras establishment at this time, and the extent to which officers of the Company's service of field rank were superseded may be judged from the fact that of the King's service three colonels (regimental lieutenant-colonels) and two colonels (regimental majors) were promoted to the rank of major-general, seven officers to that of colonel, and nine to that of lieutenant-colonel.

The captains and subalterns of H. M.'s 73rd Regiment had also a grievance in common with the officers of those grades in the Company's service, and this was the extreme youth of many of the officers of the regiments which had recently arrived from England. Pearse in one of his letters states that the senior captain of the 101st was only twenty years of age and the second captain only eighteen. In a letter forwarding a memorial from the officers of the Madras army, General Lang mentioned that a subaltern of fourteen years' service had been superseded in the command of a piquet by a lieutenant of the King's service who was only fourteen years of age, and that an experienced captain of seventeen years standing had been commanded by an officer of twenty-six months' service, and who had but recently landed in the country.

Tippoo, as we have seen, on hearing of the capture of Bednore by the force under General Matthews, had marched to oppose that officer, and with his numerous army soon succeeded in surrounding Bednore and cutting off Matthew's communication with the sea. At last the garrison was driven into the citadel, and after a brave defence capitulated on favorable terms. When Tippoo entered Bednore he went direct to the treasury, and finding it empty ordered that the British officers should be searched, and, as large sums of money and jewellery were found on some of them, he declared that the terms of the capitulation

* This officer was Sir John Burgoyne, Bart., of Sutton Park, Bedfordshire, and is not to be confounded with General Burgoyne who commanded a force in America and surrendered to General Gates in October, 1777. Sir John Burgoyne was tried by court-martial about June, 1786. He was acquitted, and immediately afterwards returned to England.

had been violated, and Matthews and his officers were placed in irons and sent to various fortresses in Mysore.

After the capture of Bednore Tippoo, aided by a detachment of French troops under M. de Cossigny, laid siege to Mangalore, and sent a division of his army to besiege Onore. The garrison of the former place was commanded by Lieutenant-Colonel Campbell, H. M.'s 42nd Regiment, and of the latter by Captain Torriano of the Bombay army. Both places were most gallantly defended, but a detailed account of the heroic conduct of the defenders would be out of place in this article. When the sieges had been in progress for some weeks news was received of the peace between Great Britain and France, and that, by one of the articles of the convention with Bussy, it was proposed that the native powers should have four months given them to adjust their differences and fall in with the treaty concluded between the two great European powers.

Tippoo was furious on hearing of the peace, and his anger was increased by the fact of Bussy having sent orders for the French troops to quit his camp, which they immediately proceeded to do. Finding entreaties and threats alike of no avail to prevent the march of the French, and dreading lest they should combine with the British against him, he at last reluctantly consented to the four months' armistice. Brigadier-General Macleod, who had been sent to relieve Mangalore, was beguiled by Tippoo, and did nothing effectual to aid the garrison, and Tippoo, while the armistice lasted, took care that no more supplies should reach them at a time than were sufficient for a day's consumption, and so increased the cost of everything that a fowl was sometimes sold for twelve rupees.

After the conclusion of the armistice the garrison was reduced to great straits for want of food; many of the sepoys were afflicted with night blindness, which was attributed to a diet consisting solely of rice, and so scarce had food become that horse flesh, snakes, rats and mice were eagerly devoured. At last, when two-thirds of the garrison were in hospital, and the deaths were averaging twelve a day, Campbell proposed to capitulate. Tippoo, desirous of putting an end to a siege, which by death and desertion had cost him half his army, granted favorable terms. On the 31st January, 1784, the garrison, reduced to 235 Europeans and 619 natives, quitted the fort with their arms, and marched for Tellicherry.*

Immediately the terms of peace with the French had been settled Fullarton had been ordered to retrace his steps and re-occupy Dharpuram, which place he had captured on the 2nd June. He was reinforced by troops from the army under General Bruce, and his force brought up to a strength of 18,636 men, of whom 2,000 were Europeans. He was directed to abstain from hostilities against Tippoo until he should receive instructions to resume the offensive, or hear that the armistice had been violated. In the meanwhile the troops were not idle,

* Campbell died, on the 15th March, of sickness contracted during the siege, and in commemoration of his services the East India Company placed a tablet to his memory in the Cathedral of Bombay.

as several refractory Poligars had to be coerced, and stores of every kind were collected in readiness for a move against the capital of Mysore.

Tippoo at Mangalore having violated the armistice, Fullarton, on the 18th October, was directed to attempt the relief of that place in conjunction with a force to be assembled at Tellicherry. After hearing that the latter would not be able to move from Tellicherry for two months, he decided that the most effectual way to relieve Mangalore would be to threaten Tippoo's capital. To this end he determined to reduce Palghat and make it a depôt for stores and supplies. Acting on this determination he marched for Palghat, and having reduced some petty forts by the way arrived before that place on the 4th November. On the night of the 13th Captain the Hon. T. Maitland, 78th Regiment, was on duty in the trenches, and, taking advantage of a heavy fall of rain, he drove the defenders from the covered way. Following up his success he pushed on to the second gateway; here his onward progress was checked, but he maintained his ground until reinforced, when the enemy asked for quarter. This was granted, and the fort was made over to the British. Treasure amounting to Rs. 1,75,000 was found in the place, and in consideration of the necessities of the troops Fullarton divided this money among them.

Leaving a garrison at Palghat he advanced to Coimbatore, which surrendered after a mere show of resistance. Fullarton now made arrangements to move against Satyamangalam and from thence to Seringapatam, hoping to gain possession of that place while Tippoo was detained before Mangalore. His preparations had been completed, and he was about to march, when, on the 28th November, he received instructions from the commissioners appointed by Lord Macartney to negotiate peace, to restore all the places he had taken, and to retire within the boundaries possessed by the British on the 26th July.

As far back as the 12th February, and before Tippoo had left the coast of Coromandel, Lord Macartney had engaged a Brahman to communicate with his friends in the service of Mysore, and endeavour through their means to obtain better treatment for the British prisoners in Tippoo's hands, and also through the same medium to ascertain whether he was disposed to separate from his French allies and enter into a treaty of peace with the British. This proceeding met with Hastings' strong disapproval, as he considered that an apparent anxiety for peace would have a bad effect. This negotiation fell to the ground. Again, immediately after the terms of peace with the French had been settled, Lord Macartney wrote to Tippoo, telling him he had agreed to an armistice for four months, and that, pending the receipt of a communication stating his willingness to adhere to the agreement, all hostilities on the part of the British would be suspended. This letter was despatched from Madras in the first week of July, but it was not until the 5th October that a reply was received, and by this time the Sultan's plans for starving the garrison of Mangalore into surrender were approaching maturity. The letter was full of amicable assurances, but contained no definite proposals. His envoy now proposed that two gentlemen of position should be deputed to his

master's court with full powers to conclude a treaty without having to refer to Madras. This was agreed to by the Government, who described the proposal as "fully meeting their wishes." To Tippoo it was particularly acceptable as showing to the native powers the British in the character of supplicants for peace.

The gentlemen selected as commissioners were Mr. Sadlier and Mr. Stannton. They left Madras on the 9th November with the prospect of bringing their negotiations to a favorable issue, considerably increased by the receipt of intelligence that Tippoo had signified his agreement to the treaty of Salbye,* both to the Peishwa and Sindia. On the 18th they reached the camp of the commander of the Sultan's troops in Coromandel, and from thence sent the order to Fullarton before referred to. On receiving this order Fullarton at once suspended hostilities, but declined to give up his conquests without further orders, wisely considering that by doing so he would be throwing away the surest means of obtaining an advantageous treaty.

One of the principal objects to be gained by the commissioners was the release of the British prisoners; but Tippoo raised objections, and stipulated that the surrender of Mangalore should precede the release of the prisoners. Mr. Sadlier was willing to consent to the Sultan's terms, but Mr. Stannton doubting Tippoo's good faith was opposed to the surrender of Mangalore until the prisoners had been released. This disagreement in opinion necessitated a reference to Government, and to obviate the necessity for reference, should the commissioners again disagree, a third member, Mr. Hudleston, was appointed. Fullarton was now peremptorily ordered to restore his conquests, and in obedience to these instructions he evacuated Coimbatore.

In the meanwhile the commissioners had been proceeding to the Sultan's camp before Mangalore, every precaution being taken to prevent their having any communication with the British prisoners in Mysore, and their progress was delayed as much as possible. At length, when within twenty miles of Mangalore, they heard that the place had surrendered. On arriving at Tippoo's camp they were subjected to every indignity, and three gibbets were erected in front of their tents.

The Government now became alive to the error that had been committed in ordering Fullarton to relinquish his conquests. He was therefore directed "not only to retain possession of Palghat should that fort not have been given up, but to hold fast every inch of ground of which he was in possession till he should receive accounts of the negotiations." At the same time preparations were made for renewing the war in other directions. Tippoo, hearing of these preparations, and knowing that by his practical rejection of the treaty of Salbye he was exposing his dominions to a combined attack by the British and Mahrattas,

* Signed on the 17th May, 1782, by Mr. Anderson on the part of the Company, and by Sindia on behalf of the Peishwa and Mahratta chiefs. By the terms of this treaty Hyder was to be required to relinquish all his conquests in the Carnatic, and to release all his prisoners within six months, and in case of refusal was to be attacked by the forces of the Peishwa. It was not, however, until the death of Hyder that the Peishwa's seal was affixed to the treaty.

was induced on the 11th March, 1784, to sign a treaty of peace.* The terms of this treaty were discreditable to the British, and as might have been anticipated led in the course of a few years to another war.†

While the negotiations were in progress the Bengal troops remained in camp near Madras. At this time, although the European soldiers received their pay punctually, the sepoy were many months in arrears. A daily ration of rice was issued to them, but everything else they required had to be bought on credit. At length the Bengal Sepoys broke into mutiny. It was occasioned, says Pearse, by a payment having been made to the Madras troops while no similar payment was made to those from Bengal. Pearse obtained part of a month's pay and sent it to the camp, at the same time desiring that the men might be informed that the balance of the month's pay would be issued in the course of the week.

On Christmas evening Pearse's palanquin was surrounded by the sepoy. Springing out he wrested a sword from a man who had hold of the palanquin, and seizing him declared he would put him to death if another man approached. On questioning the sepoy he said they had heard he was going away, when they would be left without a protector, that the Madras troops had been paid for a month while they had only been offered pay for a portion of the same month, though both were eight months in arrears. After this Pearse released the man, and made him over to his orderlies to be taken to the fort. He was, however, rescued by the other sepoy.

Next day Lieutenant-Colonel Blane sent to Pearse to request that he would return to camp, as the men declared they would not take less than four or five months' pay. Pearse instantly returned to camp, and was received with shouts of joy. He at once sent selected men amongst the sepoy to declare his displeasure at their behaviour, "which disgraced both him and them, and was to no purpose, because the money could not be obtained; if it could have been they would not have been kept in arrears." That night Captain Williamson issued the instalment to the men of his battalion, two

* Some little time after the treaty had been signed Lord Macartney and Mr. Sadlier became involved in a dispute. Mr. Sadlier, it was alleged, had concurred in a particular act of Government. Mr. Sadlier denied it. Lord Macartney reiterated the assertion in terms conveying an imputation of falsehood. A challenge from Mr. Saldier was the consequence, and in the meeting which ensued Lord Macartney was slightly wounded in the left side.

† It was based on the principle of a restitution of conquests, but no redress was obtained for the atrocious treatment of the British prisoners by Tippeo Sultan. Hyder Ali had treated them with a cruelty which manifested an utter disregard to the preservation of their lives; Tippeo did not hesitate to employ direct means to deprive them of existence. Captain Ramley, who led the charge against Tippeo's guns on the day of Baillie's defeat; Lieutenant Fraser, one of Baillie's staff; Lieutenant Sampson, an officer of distinguished gallantry, and many of the officers taken at Bednore died in captivity, and not from natural causes. On the 15th April 1,200 Europeans, including officers, about 3,000 sepoy and several hundreds of servants and camp followers who had been confined at various places in the Sultan's dominions were made over to Captain; afterwards Lieutenant-General, Sir Thomas Dallas, G.C.B., the officer appointed to receive them. Although it was known that there were more British-born subjects in confinement, and that of at least 100,000 inhabitants of the Carnatic who had been carried off into Mysore only 2,000 had been restored, the Government was too eager for peace to take any effectual measures for their release.

men of the 18th Regiment threatening to fire upon them if they took it. The next day all the sepoys received their instalment except one man, who was at once turned out of camp. The man who had seized Pearse's palanquin, and the two men who had threatened to fire on the others, were tried and punished, and order was restored.

No sooner had the treaty been signed than it was decided that the Bengal troops should return to their own Presidency, and on the 19th April a general order was published, expressing the high opinion entertained by the Madras Government of the good services performed by the detachment and of Colonel Pearse, by whom it had been so efficiently commanded.

The pay of the men was at this time nearly ten months in arrears, but pay for one month having been issued the detachment, on the 22nd April, 1784, commenced its return march. On the 4th May it reached Nellore; here orders were received to send back the European artillerymen and lascars in order that they might return to Bengal by sea, and also to leave the guns and ordnance stores at Nellore. On the 10th the detachment resumed its march, and the next day Pearse received instructions to take on the guns and stores.

The reason for the latter order was as follows: The Madras Government had determined to keep up the cavalry of the Nawab of the Carnatic which had been in British pay during the war. The men claimed nearly two years of arrears of pay from the Nawab, for a period antecedent to their being taken into the Company's pay. Their demand not being complied with they seized their officers, both European and native, and took possession of Arni, from the walls of which place they fired on General Lang, and threatened to put their European officers to death if they were not paid the arrears they demanded. Nellore was one of the Nawab's military stations, and it was anticipated that the troops there might also mutiny. It was therefore deemed impolitic to leave the guns at that place. It was further considered advisable that the guns and field equipments should be again made over to the Bengal detachment, so that it might be in readiness for active service. A few days later orders came that the guns were to be left at Masulipatam.

On the 1st June the detachment reached Ellore. The rains had now set in, and sickness had so increased that a hundred and fifty men were unable to walk. Pearse had made repeated applications for money, both to Madras and Calcutta, but the treasuries at both places were empty. The men, although their pay was ten months in arrears, had since leaving Madras shown no signs of discontent. At Ellore, however, they met a body of troops who had been paid up to date, and contrasting their condition with that of this favored detachment they became discontented and murmured loudly. Pearse with difficulty succeeded in getting a lakh of rupees, and issued one month's pay. "But," said he in his report, "some officers are not paid, and I myself have not had a rupee, though I am in very great need of cash, even for my table."

On the 6th June the detachment reached the Godavari, and Pearse with a part of his staff crossed that day, but owing to a rise of the river, and want of boats, it was not until the 13th that the whole of the troops were across. On reaching Peddapur a further supply of cash was obtained, and the men were paid for August, September and October, 1783.

On the 25th June Pearse was directed to halt at Chicacole until after the rains, or until the weather would admit of his continuing his march without risk to the health of the men. On the 29th June the detachment reached Vizagapatam, and remained there until cantonments near Bimlipatam had been prepared. It remained at Bimlipatam until the 31st October, when the rainy season having terminated the march to Bengal was resumed.

The detachment reached Vizianagram on the 1st November, Ganjam on the 22nd, Cuttack Island on the 10th December, and on the 31st December encamped at Midnapore on the ground where it had originally been formed to proceed on service. From hence Pearse reported his arrival to Brigadier-General Stibbert, the provincial Commander-in-Chief, and stated his intention of remaining at Midnapore for a few days and then marching *via* Burdwan to Ghyretti. After a brief halt the detachment continued its march, and reached Ghyretti in the middle of January, 1785.

On the 22nd January a general order was published detailing the rewards it was intended should be bestowed on the detachment which had proceeded to the west coast under Brigadier-General Thomas Goddard and the detachment under Colonel Thomas Deane Pearse.*

On the 25th January Warren Hastings, the Governor-General, visited the camp at Ghyretti, and issued an order, which concluded as follows: "The Governor-General has deemed it incumbent upon him to visit the detachment in person, to offer his thanks to them before their separation; and desires that the commanding officer, whom he is proud to call his friend, will make them known in public orders to the officers, his countrymen, and to the native officers and private sepoys of the detachment. The term of his public existence is now within a few days of its close. But it is a consolation to him thus to mix with his regrets for the loss of a service endeared to him by many years of care, attachment and vicissitudes, a declaration of justice and gratitude marking its last period."

The following day the Governor-General recorded a Minute, proposing that the British officers of the detachment should receive some token of the approval of Government, and recommended, first, that swords should be presented to Colonel Pearse and Lieutenant-Colonels Edmonstone and Blane; secondly, that all officers should be confirmed in the appointments in which they were acting; and thirdly, "that the names of the officers be entered on record for such future marks of the favor of Government as the rules of the service may admit; and to this list may be joined on the same principle that of the officers who

* This order is quoted at p. 170, No. 60, Vol. XIII. of the Journal of the Institution published in September, 1884, and an illustration of the medal granted under this order is given at page 160 of the same volume.

have lately served with the other great detachment returned from the other side of India."

"This," continued the Governor-General, "is the last appeal which I shall make to my present colleagues in the administration, and I venture to declare, without consulting them, that the sentiments of one are similar to my own from the same impulse, excited by the personal meeting with men so deserving, and among them some veterans who were once his associates in the same career of military enterprise; and that those of my successor* will be not less favorable when, to the spirit of liberal discernment, he shall have joined the same personal motives as those which I have ascribed to myself and Mr. Stables."†

The detachment was now broken up. Colonel Pearse resumed his appointment of commandant of the Bengal artillery. Captain Richard Scott was confirmed in the command of the 26th Regiment; Lieutenant David Ochterlony was appointed Judge Advocate-General of a division of the army, and several other officers were similarly rewarded.

[The works chiefly consulted in the compilation of this article were: Williams' History of the Bengal Native Infantry; Wilson's History of the Madras Army; Historical Record of the 1st Madras European Regiment; Wilks' History of Mysore; A View of the English Interests in India, by William Fullarton of Fullarton, late commander of the southern army on the coast of Coromandel; Auber's Rise and Progress of the British Power in India; Rennell's Memoir of a Map of Hindoostan; East India Military Calendar; and a Memoir of Colonel Thomas Deane Pearse, published in the British India Military Repository.]

* Mr., afterwards Sir, John Macpherson, who continued to act as Governor-General until the arrival of Lord Cornwallis in September, 1793.

† John Stables, Esq., member of Council, formerly in the army, and commanded a battalion of sepoys at the battle of Buxar.

INFANTRY DRILL.

By Lieut.-Col. C. McD. SKEEN, *43rd Goorkha Light Infantry.*

THE principal object of drill, as applied to battalion and brigade exercises, is to enable bodies of troops to move rapidly and in good order from one position to another; and the reason why it is so difficult is chiefly because movements can be done in so many different ways, so that an officer, when called upon to carry out any movement, has to think over the different methods and to consider which of them is likely to be most suitable.

It will possibly be found that these different ways of obtaining the same end may easily be brought in all or most cases to one, which would not only tend to greatly reduce this difficult part of drill, but also very much reduce drill as a whole, while still retaining the advantages possessed by the present system.

Our fighting formation is line, column and other formations being, used in the field for purposes of intermediate movements; so that a battalion in line having to move into a position, say one mile to the front, and facing half left of the original front, would do so by intermediate formations of some kind.

Now this may be done in a variety of ways according to the present drill. Among them may be mentioned:—

Advancing in oblique echelon, and changing front, or forming line obliquely; advancing in fours from flanks of companies, reforming line, and changing front.

Advancing in column from any company and forming line obliquely, or changing direction and forming line on the front company.

Advancing in quarter column, and changing direction into new alignment.

Advancing in double column. These may be done either from the halt or on the march.

There are others, but these are enough to show how many ways there are of attaining the same end.

Now these might all be reduced to one which would be suitable for all circumstances, and there is no doubt that the most suitable form is, quarter column.

Quarter column is the only formation that can be used on every occasion, and it has advantages over all others. In quarter column the whole battalion is under the eye, and within hearing of the voice of the Commanding Officer, and might almost be worked by signal from him.

In open column it is quite the reverse; the greater part is out of sight of, and beyond hearing any orders from, the Commanding Officer.

The same with all open formations. But to consider if quarter column is suitable for all circumstances : Take any example such as the before mentioned ; a regiment in line is required to move to another position, a mile to its left front, and with its new front about half left, moving, say, by oblique echelon.

To begin with, if there is any noise from firing, &c., the Commanding Officer's voice will not be heard by most of the battalion after starting. It may then be found that after going some way the nature of the ground necessitates some other formation, to attempt which creates confusion, and the men probably arrive in their new position in anything but good order.

Another way which is commonly used is by advancing from a flank in open column. This is at all times a difficult movement, from the fact that the leading companies generally outstrip the rear ones, and as a rule, especially on rough ground, have to mark time to let them up. There is also invariably a great deal of noise from the number of words of command each Captain has to give, and when in column the regiment may be said to be lost to the Commanding Officer, and to reform line obliquely from this formation is always more or less difficult, and tends to create confusion.

The same may be said of all other open formations, double columns, &c. They are all difficult to perform, and all of a more or less struggling nature.

Now take quarter column. The battalion is doubled into quarter column, on any company, with scarcely any noise.

The Commanding Officer takes his place close to the whole of his men, and marches them off at once, wheeling into the new alignment, and deploying without any confusion whatever, and the men arrive in their new position in good order.

A regiment in quarter column can move over any ground on which troops can manoeuvre, and always keep its formation, which is another advantage, and if necessary to reduce its front, say in passing over a bridge, can do so at once by advancing in fours, reforming again on the other side.

In regard to time, also, it will probably be found that this method is in the end the quickest, as there is not likely to be any marking time or delay in taking up some other formation, which is generally the case with all others. This would be more likely to be the case on rough and unknown ground.

That formation must be the best by which movements can be done with the greatest ease and the least amount of confusion ; and if all movements can be done in one way over any sort of ground, it must be better than having a number of ways, which only make drill a difficulty instead of a simple matter, and the less there is to learn the more likely that it will be done well.

What advantage can there be from having so many formations in our drill ?

What is the use, for instance, of advancing or retiring in double fours from the centre ? It is seldom used, because double company columns

can only be used in open country, where there would be no necessity for reducing front.

What is the real use of double columns?

If it is possible to move in double column, it must be easier to move in single column, and single columns are much easier to manage than double columns.

It might be said that quarter column offers a better target than other formations, but at a distance the more troops are spread over the ground the more they would be likely to receive injury; whereas within striking distance troops would be always in fighting formation, except where they could find cover.

The Drill Book says that "columns in case of attack can readily be formed into line in any direction," but this is scarcely the case. It is very difficult to form either a column or double column suddenly into line in any oblique direction, whereas for quarter column nothing can be more simple. It is wheeled into the required alignment, and deployed.

The Drill Book also says that the employment of one form of column in preference to another depends on the ground, and can only be determined by the commander on the spot.

Now this is all very well on an open parade ground, but on unknown ground it is impossible to make sure of which is the best formation, but as the Drill Book also says "quarter column combines the convenience of moving in a small space, with the capability of forming in any manner to resist attack," and as to this may be added that it is suited to every sort of ground, it would appear that a commander would always be safe in using it, and, if so, what is the use of any other?

Now, supposing that the only intermediate formation was the quarter column, this would reduce drill in the field, *i.e.*, leaving out all connected with attack formation, route marching, &c., &c., to—

Line.—As the fighting formation (which would include echelon both direct and oblique, but only to be used as a line for purpose of advancing or retiring, not for intermediate formations).

Quarter column.—As the only intermediate formation (which would also include advancing or retiring in fours as a means of reducing front.)

Square.—As a fighting formation (column formations would be useful as at present, but only for purposes of parade, not for manœuvres, such as columns for forming up on parade, &c., &c.)

With these three, everything that can now be done could be more easily and better accomplished, and it would then be possible to do without a number of other formations, such as changing front, which is now done by a number of complicated and difficult ways, and which might all be done away with and reduced to the one, *viz.*, the quarter column.

Every one knows the difficulty, at present, of a line changing front by echelon, short echelon, &c., &c. Now take the one simple form—a line to change half left. Quarter column is formed at the double on left company or centre if required, wheeled up into the new alignment

and deployed at double; all done without noise or confusion impossible to go wrong. Nothing for the Commanding Officer to think about, as to which is the best way, &c., &c. And again it will probably be found in the end to be the quickest method.

Besides reducing the amount of drill as regards actual movements, this method would tend in other ways to simplify drill. For instance, guides and markers would be quite unnecessary, and thus one of the chief difficulties attending drill would be avoided.

Taking guides first. A guide has two duties to perform as such—to tend his company and to dress it in line.

As regards the former, it may be of some slight importance on show parades with some of the present movements, but would be little required under this arrangement; and, as a matter of fact, men trained to march without a guide would soon learn to march better without than with them. At present every one knows that bad marching is more often the fault of the guide. For instance, a column starts off, the flank of direction is changed. The men, if left alone, having started off squarely, would most probably move straight to their front, but the guide doubles up on the flank, fails to get on the proper alignment, and puts out the whole company.

With regard to dressing a company, it is now allowed that it cannot be done when firing is going on, or quick work required, and bad dressing, like bad marching, is more often the fault of the guide, so why have it at all?

A company when it wheels back into column from line is not dressed by a guide, and it may have been noticed that this is generally done better and quicker than dressing in line with a guide to help. With little practice, dressing can be done by the captain and section commanders from the rear, and with a major directing from one flank of line would be just as well done without guides.

For markers. Their duty is to take up points for the company. This also cannot be done when firing is going on or quick work wanted. A great deal of time spent over drill is devoted to teaching guides and markers, and how often it happens that movements have to be done over and over again so as to teach markers their work, and yet it is acknowledged that they are of no use, but time is spent over teaching them to show well at inspections. Very little practice would enable a regiment to work without them. If it is necessary to give a dismounted point, at any time, it does not require specially appointed men for the purpose; any non-commissioned officer could be sent out. But the guides and markers have a really important duty, which is almost lost sight of. The men look on them merely as guides and markers, and, if asked who their section-commanders were, would probably be unable to say.

Section-commanders should have no other duty but to look after and command their sections. It is most important that they should know their men, and that their men should know them; and when proving his company, the commander should call his section-commanders to the front to prove their own sections, so that all should know each other.

To simplify drill, besides reducing the various ways of doing the same thing to one, and giving up guides and markers, it would also add to the effect to reduce all words of command to as simple a form as possible, also not to break up companies, as in forming half companies and sections, not to perform any movement, or rather change of formation "on the march." These are much better done from the halt; the difference in time is very small, and taking into consideration that movements done from the halt are generally well done and easy to learn, and that on the march they are often badly done and difficult to learn, it will probably be found that a series of movements, done in the former manner, take shorter time than they would if done "on the march."

By going now through the first four parts of the Drill Book, we shall see how much unnecessary work can be saved.

PART I.

This being the setting up and training of the recruit, few changes are necessary; but some other exercises might be introduced, such as jumping, both high and wide, with arms and accoutrements, rushing short distances without losing order, &c., &c.

The only change in this part would be—

SECTION 33.—*Men marching as in file forming squad.*—There are six ways of doing this which might be reduced to two, *viz.*, Front and Rear Form Squad.

Part I.—Forming at the halt.

Part III.—Forming on the march.

Part V.—Forming to the right or left.

Part VI.—Forming to right or left about.

These are all of really very little use, and take a long time in learning. Part III—"on the march" is most difficult and useless. The one form, paras. 2 and 4—"Front and rear form," are sufficient, and for paras. 5 and 6—"Forming to right, or left, or about," it would be just as easy to wheel to the right or left, or about, and then form to the front.

The same remarks would apply to Sec. 44, paras. 3 and 4—"Forming in files"; also to Sec. 46, para. 2—"Forming in fours."

PART II.

GENERAL RULE VI.—*Officers of a company.*—The captain would command. The next four seniors will be section-commanders, or the subalterns might be half-company commanders, and the four senior sergeants, section-commanders.

GENERAL RULE XIII.—*Assembling on guides or markers.*—Part relating to guides and markers omitted.

SECTION 1.—*Formation of company.*—The captain would be three paces in rear of the centre. Senior subaltern in rear of right half company, junior subaltern in rear of left half company, four sergeants in rear of sections, or subalterns in rear of 1 and 4 sections, two sergeants in rear of 2 and 3 sections as section-commanders; and if company changes ranks, would still remain with their own sections.

SECTION 2.—*Company in line taking open order.*—Part relating to guides and markers omitted. Rear rank will dress by themselves, corrected, if necessary, from the rear.

SECTION 4.—*Wheeling into line.*—All relating to guides and markers omitted. The captain will judge when the wheel is completed, and halt his company, the same as when wheeling into column from line. There is no difficulty in this.

SECTION 5.—*Wheeling into column.*—In the same way all relating to guides and markers to be omitted.

SECTION 6.—*Changing front.*—To be omitted altogether.

SECTION 13.—*Marching in file forming to front or rear. Right, left, or about.*—The only form necessary is "Front and rear form," and not "at halt," or "on the march." To form to right or left, or about, wheel first, then form to front or rear.

SECTION 16, PARA. 2.—*Counter-marching "on the march" omitted.* Should only be done at "the halt." Counter-marching even at the halt is of little use, changing ranks being quite sufficient.

SECTION 20.—*Formation of half companies and sections.*—With the exception of what relates to forming square, half companies and sections should not be used for parade purposes. They are rarely even now used. A company, if possible, should never be broken up. If necessary, a half company or section may be detached under its commander, but this does not require any special instruction.

Even on the line of march, it would be better to have no other formations—than quarter columns of companies or "fours." Marching in half companies or sections is a most uncomfortable and tiring method. "Fours" is the favorite formation with the men, who can march with freedom, which they cannot get in any other; and any small advantage derived from these formations is more than counterbalanced by the men having to march in a cramped position. In fours there would not be the same necessity for defiling as it is with a larger front, so that the march in this formation is not likely to be interrupted or delayed.

SECTION 28.—*Inspecting and proving.*—Half companies and sections should not be named. Right, left, outer or inner. They should be numbered 1, 2, 3, 4, so that, when separated, they should always know what half company or section they are.

PART III.—BATTALION EXERCISE.

All relating to guides and markers should be omitted, but although markers be not used, yet it would be necessary occasionally to have dismounted points, either battalion or company, for instance, to mark a point for a battalion to march on, or for a company, as when companies form independently on parade, when each company would send a non-commissioned officer to mark the spot on which its flank would rest. When marching on any point, the flank section-commander would direct the pivot flank from their rear, the other companies being directed in the same manner on them under direction of the major superintending; but very little correction would be necessary when men are properly trained, and the company formed squarely to its front before starting.

SECTION 6.—Dressing a battalion in line.—This would be done without markers. If necessary, one or two dismounted points might go out with the major to get the alignment.

SECTION 10, PARA. 3.—Column closing to the front without halting.—Can never be required. Much better to do it always at halt.

SECTION 11, PARA. 3.—Opening from the rear on the march.—Omitted for same reason.

SECTION 12.—Columns diminishing and increasing their front.—Omitted as regards columns and double columns. For quarter columns; this should be done as at present, either by fours or breaking off files, or forming fours deep and closing.

SECTION 13, PARA. 2.—Changing position by the flank march of fours.—Omitted. Columns should not be used for internal movements of battalion drill.

SECTION 15.—Counter-marching.—Should only be done at “the halt,” but of little use at any time; changing ranks quite sufficient, and much better.

SECTION 16.—Changing the order of a column.—Omitted. Of no use.

SECTION 19.—Column moving to a flank opening or closing.—Omitted. The only occasion on which this formation is necessary is when a line advances or retires in fours from right or left of companies, but should be looked upon merely as an advance or retirement of line, and to be reformed again into line. If necessary to form it into quarter column, it should be done at “the halt.”

SECTION 21.—Line wheeling into column.—Omit all relating to guides.

SECTION 23.—Advancing in column, column of double companies, or columns of half battalions.—Omitted. Nothing but quarter columns to be used for battalion drills.

SECTION 24.—Retiring from one flank in rear of the other.—Omitted for same reason.

SECTION 25, PARAS. 1 & 2.—Forming column from line.—As regards column, omit all relating to guides and markers.

PARA. 3.—Forming column of double companies.—Omitted. Double company columns not to be used.

PARA. 4.—Forming column from column of double companies.—Omitted.

SECTION 26.—Column wheeling into line.—Omit all relating to guides and markers.

SECTION 26, PARA. 2, PART II.—Quarter column wheeling into line from the rear.—Omitted. Of no use. Much better and easier to wheel up and deploy.

SECTION 27.—Column forming line to either flank.—Omitted. Line formed only by deploying from quarter column.

SECTION 28.—Columns of double companies forming line.—Omitted.

SECTION 29, PARA. 3.—Deploying on the march.—Omitted. All movements to be done at the halt.

SECTION 30.—Column of double companies deploying.—Omitted. Double companies not used.

SECTION 31, PARA. 2.—*Moving to a flank in echelon by fours.*—Omitted. Not of the slightest use and very difficult, and likely to cause confusion.

SECTION 32.—*Line changing front.*—Omitted. All changes of front done by forming quarter column and wheeling into new alignment, and then deploying.

Note.—Echelons, both direct and oblique, are only to be looked upon as "Line," and merely for the purpose of advancing or retiring, and always to be reformed into line.

SECTION 34, PARAS. 1 & 2.—*Forming line from echelon.*—Omit all relating to guides and markers.

PARA. 5.—*Echelon forming line at right angles.*—Omitted. Should be done by means of quarter column.

SECTION 35.—*Echelon forming line in oblique direction.*—Omitted. Done by means of quarter column.

FORMATIONS TO RESIST CAVALRY.

Besides company and rallying squares and line formation to resist cavalry, we have three kinds of battalion squares, with five methods of forming them. These might be reduced to one, the four deep square, which is the only one of any use in the field.

SECTION 37.—*Battalion in line forming square.*—Is a most difficult and useless formation, only applicable to purposes of parade, which could be met by forming three sides of a square by wheeling up flank companies.

SECTIONS 38 & 39.—*The different forms of squares.*—These might be reduced to one, four deep, and if possible keeping every company intact.

A two-deep square is of little use in the field. With company and rallying squares and line formation to resist cavalry, one battalion square, four deep, is sufficient.

PART IV.—BRIGADE EXERCISES.

The foregoing remarks applied to brigade exercise would result in a large reduction of unnecessary movements, everything being done as much as possible without dismounted points, which only cause delay, and bearing in mind that the only internal formation is the quarter column.

Everything on parade should be done as it would be in action. In the present drill, we take great pains to teach what is not likely ever to be used in the field.

SECTION 5.—*A brigade in line of quarter columns changing front.*—Although it would not be necessary to form in mass, as a battalion would form quarter column from line when changing front, yet it would be done, as then, by deployment only.

PARA. I.—*Changing front forward.*—Each battalion would wheel up till it was parallel to the new alignment. The base battalion would halt; the rest deploy into their new position.

PARA. II.—*Changing front by throwing back the whole on a flank.*—All the battalions, except the base one, will be turned to the right about, and will then wheel up parallel to the new alignment, the base battalion

wheeling at same time and halting on new front, the remaining battalions deploying.

PARA. III.—*Changing front on a central battalion.*—The above rules will apply.

SECTION 10.—*Advancing or retiring in line of quarter columns of double companies.*—Omitted. Double columns not to be used.

SECTION 11.—*Advancing in columns from flanks of battalions.*—Omitted. Only quarter columns to be used.

SECTION 12.—*Retiring in columns from one flank of battalions in rear of the other.*—Omitted.

SECTION 13.—*Double columns.*—Omitted.

SECTION 14.—*Double columns forming line.*—Omitted.

SECTION 15.—*Advancing or retiring in column.*—Omitted.

SECTION 16.—*A brigade in line changing front.*—Omitted. This is to be done by each battalion forming quarter column, wheeling into position parallel to new alignment, and deploying on base battalion.

SECTION 17.—*A line changing position.*—This would, in the same way, always be done by quarter columns, which can be moved over or round any ground on which troops can manœuvre.

Thus in the same way as in battalion exercise there would be—

Line.—Including line of quarter columns at any distance.

Mass.—Equivalent to quarter column of battalions.

Line.—As the fighting formation (including lines of quarter columns, and echelons of all kinds, to be used only for advancing or retiring.)

Mass.—For all distant changes of formation, and if a mass were to change direction by successive battalions in the same manner as companies of a battalion in column, line might be formed at any angle very quickly by deployment. Changes of front in lines of quarter columns would all be done by wheeling up or back all battalions parallel to the new alignment, then deploying on the named battalion. Changes of front in line would be done by forming quarter columns first, then wheeling parallel to new alignment.

EXTENDED ORDER.

There have been a number of different kinds of attack formations invented lately, as it seems to be acknowledged that our present one is not sufficient; but nothing seems to have met with general approval, and the probability is that an attack formation to give general satisfaction never can and never will be invented, for the simple reason that no one system can ever meet the requirements of all attacks.

No two attacks, even were they to be on the same ground, can ever be exactly the same, so how can any one system be invented which will suit all.

It is out of the question that what we now practise on parade would be used on every occasion of attack. In fact is it likely that it would ever be used against an enemy of a similar or greater strength than our own?

Let us first of all consider our system as it is.

It is supposed that a force has arrived in front of a position occupied by an enemy armed like ourselves with artillery, machine guns and rifles.

The commander decides on the point of attack, and we will now follow one of the attacking regiments.

Its formation is, as a rule, half companies of half of the number of companies in extended order as a fighting line, the unextended portion of these companies in support at about 180 paces, the remainder of the battalion as a main body 300 paces in rear.

They advance in this formation till within some 600 yards of the position, when the supports close up, and the fighting line halts at 100 or 150 yards off the position to be attacked, to allow the main body to close on it and make the assault.

Now the ground over which this advance takes place must either be open or broken. If the former, then the matter is settled, for not a man would likely ever reach within 150 yards, for it is simply impossible that such an advance could ever be made on open ground by day, against any enemy armed like ourselves, except in overwhelming numbers, when they would have to be prepared to suffer enormous losses.

If the ground is broken and uneven, they would have a better chance, but a poor one even then, unless good cover was afforded, in which case it would be much better to advance in one body instead of being broken up with the exception of some scouts ahead.

We are obliged to practise our system regimentally on open ground over which an attack never could be made to allow of the commander seeing everything that goes on, which he certainly never could do in a real attack. The first thing we teach is that the men must be very particular in not having more or less than three paces between each file, and also to go straight to their front. Now this can only be done on open ground, in fact on the only ground on which an attack is never likely to take place.

We call the extended portion the fighting line. It is no more the fighting line than the other portions. It seems a misnomer to call them supports, and main body, or reserve, considering the formation is only supposed to last for about 800 yards.

Then the companies are broken up. This must be bad at any time.

From the position of the so-called supports and main body, they and not the fighting line are the part of the battalion that will suffer heavy loss. Every shot that misses the fighting line is likely to tell either on the support or main body.

If complete cover is available, why break up the regiment at all? On arrival at position from which the assault is to be made, the fighting line halts till the rest come up, and how are they then formed? Anyhow. Fancy a captain, when he arrives at this point, expecting to lead his company to the attack, and finding them probably the rear rank to another company.

During the advance the fighting line keeps up a steady fire. Is this

good? Is it not likely to do more harm to themselves than to the enemy? At our field firing we have to be most careful that no accidents happen; and it can only be done on open ground on that account. We do not mind blank firing on broken ground. It does not then matter if the men fire on each other.

What good does this firing do? The enemy in position will not stand up in masses to be fired at. They are probably under cover. Even if some of them were exposed, is it likely that men in a breathless state will make good shooting? So that actually there does not seem to be any good resulting from an attacking force firing.

There are other objections. First of all the advance must be greatly delayed and ammunition thrown away; but the worst of it would be that the whole plan of attack is exposed to the enemy. Men advancing and taking advantage of cover will scarcely be visible at 800 yards, or even 600, but one shot from a rifle shows where they are, and the consequence is that the enemy's fire and attention are directed to that part.

The great object of an attacking force must be to arrive at some part of the ground from which an assault could be made, if possible, without being seen, or at any rate attracting the attention of the enemy as little as possible, so that they may be taken unprepared, but firing has the effect of not only showing from what part the attack is to be made, but also of allowing them time to prepare for it.

Being probably under cover, and seeing that this fire had little or no effect, the enemy would only gain confidence.

Which is the most likely to succeed—an attack made in this manner, showing our hand to the enemy, and giving them time to prepare for it, or one delivered from some point to which the force had been brought up in perfect silence, and, if possible, concealed from view, at any rate until they got to within such a distance, as to allow of no time for the enemy to make any fresh dispositions?

Is not a sudden attack more likely to shake and make unsteady defending force than one conducted in an open manner?

Consider the difference. In one case, the defenders know exactly what is going on. How they are to expect and meet the attack. In the other, they are almost in ignorance of the movements of the enemy.

They do not know probably till the last moment from which direction the real attack is to be made. There is nothing more likely to shake the nerves of men than to fancy that something unforeseen is about to happen, and they don't know how to prepare for it.

Now let us consider an attack conducted in some different manner. As before, the attacking force arrives at a certain distance from the position to be attacked. Dispositions are made, and the commander selects a point on which the attack is to be made.

He also selects a position from which the attack is to be made and issues his orders to commanders.

A strong covering party might be sent on in front to take up some good position, from which heavy firing would be made to attract the attention of the enemy from the real attack. Under cover of this the attacking force would silently and rapidly take up their position for the

attack, advancing under cover as much as possible and not breaking up either regiments or companies.

The commanding officer informs his officers of the point they are all to make for, and sends off, say, two or three companies at a time, probably preceded by scouts.

Each captain exercises his own judgment in advancing his company. Suppose one had to cross some open country, he might have to advance all to one flank, or it might be necessary to advance man by man—anything so as to avoid being seen. Another might find his part broken ground, when he could advance his company in a body; but they would all take advantage of cover, waiting for each other, and arriving together at the appointed place, and if necessary supporting each other if attacked.

This would be done rapidly. Then other companies would advance at a convenient distance behind the first in a similar manner till all had arrived at the appointed place.

All this would easily be acquired by teaching, and men are more likely to take an interest in such work, and each individual would learn to use his common sense.

Regiments would thus arrive at the position from which the assault would be made with their companies unbroken, and the regiment would be reformed as it was previous to the advance.

This is of course only what might be done on certain ground. Every sort of ground will require its own form of attack, taking into consideration all circumstances regarding time, relative strength of opposing forces, position of enemy, &c., &c.

Regarding taking cover during an advance, some people are greatly against taking cover at all, on the ground that it is likely to cause the men to hang back.

This might be the case when firing was allowed, but when there is no firing the rapidity of the advance creates a large amount of excitement, which would prevent the men from thinking of anything but of getting to the position for which they are all making, and there is little doubt that by taking cover fewer casualties would occur, and it would be surely better to arrive at the attacking point with 80 per cent. of the original strength than with only 40 or 50 per cent.

Is an attack likely ever to be made under the present system?

Would a commander be likely to remember such a command as the following:—

“The battalion will extend for attack by sections—

No.	will extend from	...	...
No.	”	”	...
No.	”	”	...
No.	”	”	...

and form their own supports.”

Would company commanders like to see their companies broken up in all directions? One of our strong points is that our men are always so willing to follow their company officers, but how about a company that is turned into the rear rank of another, and probably some of its men with the other wing?

The probable fact would be that the system would be forgotten, and officers would do what is the most natural course, use their own judgment in making arrangements to suit the ground, and other circumstances, as might be the case at the time.

They would only suffer from the disadvantage that they had never, in time of peace, been able to practise all kinds of attacks under different imaginary circumstances.

Take a company advancing under the system, and having to pass through some thick scrub. If the captain stuck to the system, he would caution the men about keeping their four paces distance, but the most natural course would be to point out some object on the far side to make for, section-commanders keeping their sections well in hand. We teach our men only how to advance in order, but they also ought to be taught how to advance in disorder, re-forming again into order—in fact to teach officers and men how they should act under all circumstances.

If an officer on service were to think only of what he had read in the Drill Book, or what he now learns on parade, instead of using his common sense, he would very soon find himself in a bad way.

It would probably be found much better instead of having one system only to have certain rules to be observed and leaving all to the commanders of regiments. They would receive their orders and carry them out in the best way they could, but this can only be done by practising in peace time on every sort of ground and under all kinds of imaginary circumstances. Only experience can teach this. Rules might be something as follows:—

1. Companies never to be broken up, and always to work under their own officers and section-commanders.
2. Attacks never to be practised on open ground, or on such ground where a real attack would not be attempted.
3. It should always be supposed that the enemy is at least equal in all respects to the attacking force.
4. No firing to be made by the assaulting force during the advance, unless attacked.
5. All cover to be taken advantage of, even if it be only a few blades of grass.
6. No words of command necessary, merely instructions issued from the commander to his officers who carry them out.
7. Companies to be led into position for attack by their commanders, who will select the best line for moving, and the most suitable formation, giving all assistance necessary to other companies.
8. Men always to wear their oldest uniform or, if possible, service kit.

For this no form of drill would be required, and it would only be necessary to have constant practice at such work, as would be likely to occur on service.

So that in the Field Exercise Book in Part I, rules regarding extended order, so far as they relate to the attack formation, might disappear.

The same in Parts II, III and V, which would reduce bookwork by a large amount.

Skirmishing would still be as necessary as ever, both for covering an advance or retirement, as well as for engagements in the field.

With regard to having no firing on the advance, this, of course, only applies to the disposition for an attack. It might be necessary to have firing, say, in the event of a counter-attack, &c. At the same time firing should never be allowed by men when moving. It can be of no use, except to make a noise. Men should never be allowed to fire till they are steady enough to take aim.

The front rank of a line advancing preparatory to charging might fire volleys from the hip without halting.

These few rough remarks on drill are made with the purpose of trying to show how much there is in our present drill which might safely be done away with, retaining all that is useful for real service, with what is required for show, such as "marching past," "review order," &c., &c.

In former days officers and men had little to do except on parade; consequently a great deal of time could be devoted to it; now it is very much the reverse.

Important work has to be neglected for drill, so that a regiment should make a good show at inspection.

If a number of useless movements were done away with, it would still be the case that regiments make as good a show as ever, while being able to spare more time for other useful subjects.

There is no doubt that drill is still very difficult, requiring a large amount of study and practice to prepare officers to appear always as "good drills," but the greater amount of what is learnt is of little or no real use.

Under some such arrangement as here proposed drill, instead of being a puzzle to many, would be simple for all, and it would only require good "drilling," that is Recruit and Company Drill, to make a regiment always fit either for show or for work in the field.

BERNARD MYO, 8th September, 1887.

THE ISSUE OF "FIRST RESERVE" AMMUNITION TO INFANTRY ON THE OFFENSIVE IN THE FIELD.

(In accordance with modern requirements and how it can be carried by the soldier.)

By MAJOR F. G. A. WIEHE, *Durham L.I., D.A.A.G. for Musketry, 2nd Circle.*

1. When on the offensive a plentiful supply of ammunition throughout the attack, to meet a counter-attack, after a successful assault, or retirement in case of a repulse, is absolutely necessary. Given the transport, it is easy enough to have ample reserve ammunition in the field, but its *issue* so as to ensure to the troops engaged during an offensive action—the possession at all times of an ample supply—is a most difficult and important matter, and deserving of serious attention. A scarcity of ammunition at the critical stage or stages of an action in these days of rapid firing arms of precision would entail certain temporary defeat, or may be disaster.

On the defensive, the supply and issue is a matter of comparative simplicity. Therefore it is only with the *issue* of reserve ammunition in the field to *infantry* troops on the *offensive* that I propose now to deal.

2. In these days of rapid firing, and especially if "long range fire" is carried out, the expenditure of ammunition is vastly increased, and the difficulty of supply and issue proportionally enhanced.

It would, therefore, seem somewhat strange that on a matter of such vital importance the regulations of the service afford such meagre information for guidance disposing, as they do, of the subject in a *few lines* of vague meaning, leaving so much in the matter of its execution to the discretion and opinions of individual general and regimental officers. Of course, no hard and fast rules to meet the variable conditions of service could be laid down, but I think some clear and definite *guiding principles*, based on the well-known destructive powers, and the tactical employment of modern rifles which have exercised such a reforming influence on the tactics of modern *European* warfare, might be framed and published.

3. Why is it that such has not been done long ago, and what is the reason of our prolonged apathetic neglect of the matter? I venture to suggest this as an explanation that, owing to our insular position and our Imperial interests, continually involving us in petty wars, mostly with an ill-armed and ill-disciplined enemy with almost invariable success, we are content to remain conservatively satisfied, blinding ourselves to the great strides in practical efficiency being

made by Continental powers, who find it necessary to keep pace in all respects with the ever-increasing demands of military service.

In other words, we lack practical experience obtained on a modern European battle-field, and we have not made up for the deficiency by profiting in this matter by the experience of other European powers.

4. Let us briefly consider what their systems are.

According to Mayne's "Fire Tactics," published in 1885, the systems then in vogue for issue of ammunition to firing line in the field were as given below, but it is not improbable that later improvements of a practical nature have been introduced.

It is somewhat consoling to find that Russia and France are little, if anything, in advance of ourselves, as their wagons, and men with bags, follow the firing line to the *last*. But Germany and Austria issue 20 and 12 rounds respectively before extending for attack. They also recognize that men-carriers are not efficacious for keeping up a proper supply, and substitute horse agency. Moreover, if ground is open, they do not send them further than the "supports," who carry forward the supply for "firing line," or in any case only issue up to the *beginning of the last or critical stage*. They have therefore made sound practical improvements in their system, appreciating its vital importance.

It is possible that at some time British and Native troops may have to meet a European foe armed probably with Magazine rifles. Does it not then behove us, with our comparatively miniature army, our somewhat slower firing breechloaders, and our notorious inefficiency in "musketry fire tactics," to counteract the odds against us by having perfect arrangements for the continuous supply of ammunition to our troops during an action? Otherwise, it is surely not unreasonable to predict that we may discover our faults too late, and buy a painful experience most dearly. May such a fate never overtake us! But rather let us, while there is time, profit by practical experience, either our own or that of other nations, and make good defects in our system (provided, in the opinion of men better qualified to judge than I am, defects *do* exist), and not shut our eyes blindly to their existence, resting satisfied under a false sense of security and efficiency, which may not inaptly be compared to the fallacious tactics indulged in by the ostrich, when pursued, which furnishes a moral we might well profit by.

5. Let us now consider what the regulations on the subject are.

In the "Field Exercise," page 220, para. 8, it says: "The regimental ammunition reserve will follow the main body at a distance of about 20 yards, until it *approaches the fighting line*, when it will be posted under cover in some convenient spot for the ready supply of ammunition *to the fighting line*; the pioneers will accompany it. Previous to an advance, each company of the fighting line should have reserve ammunition distributed, a portion of which may accompany the supports." (The italics are mine.)

Now this seems to me extremely vague and open to several interpretations.

I understand it to mean that the first reserve would follow

"main body," *throughout the action*, until it gets close to the "fighting line," when it would be placed under cover in a suitable position, ready to issue ammunition as required, *under a hot fire, at short ranges*. The next few lines I fail to understand, but it may mean that, previous to extending the "fighting line" should have some reserve ammunition (but how much?) issued, and a portion of such issue (or is it of first reserve?) may be carried by the supports (or accompany supports instead of the main body).

Again at page 231 it says: "Serving out ammunition from the regimental reserve must be carefully and frequently practised."

These are the only references to the subject contained in the book. It is possible, though not probable, that more detailed instructions have been issued in England on the subject, from the Horse Guards, that I am not aware of; but it is most unlikely, as, if so, such orders would in all probability have been promulgated to the army at large. The matter would, therefore, appear to be thus briefly disposed of.

In India the matter has been somewhat more fully considered and dealt with in the following circular memoranda: "A. G.'s" No. 249E., dated 27th October, 1883, submitting proposals by two Commanding Officers for the management of regimental reserve ammunition. The issue by one was advocated before and during the action as required (by men with canvas bags); by the other apparently in the same manner, but if issue required "exceptionally" during the action, he proposes its being carried by "supports" and "main body" to hand over on reinforcement, and this plan seems to be preferable.

These proposals were sent for trial and report by General Officers Commanding.

The next was "A. G.'s" No. 2401E., dated 9th October, 1884, giving details as to procedure of Pioneers, or N. C. officer in charge of company mules, when signalled to for ammunition.

This clearly implies they are to risk exposure and take mules right up to "fighting line," *during the action, cover or no cover*—canvas bags to be used only in places inaccessible to mules.

This permits great latitude to Commanding Officers, and hardly impresses upon them the necessity of not keeping the ammunition, mules, and men exposed to fire.

The consequences of this, combined, perhaps, with insufficiently practising the issue of ammunition on regimental and brigade parades, were recently demonstrated in a practical manner at the Delhi Camp of Exercise, and did not escape the notice and unfavorable criticism of the foreign officers present.

During the field operations, serious defects in the issue of regimental reserve ammunition,—failure only too often of officers to grasp the importance of keeping mules under cover, and to profitably exercise their discretion in the efficient issue of ammunition,—were brought prominently to light, and were commented on somewhat strongly by H. E. the Commander-in-Chief, in "A. G.'s" Circular Memorandum No. 756E., dated 3rd June, 1886.

A consideration of the gist of the regulations and orders on the

subject, as enumerated above, will, I think, be admitted as supporting my contention already expressed, as to a want of definite instructions and guiding principles.

6. I will now proceed to offer my suggestions towards a solution of the subject under consideration.

First of all I will state the principles which constitute the basis on which my proposals will be framed.

1st.—That, owing to the deadly efficacy of modern fire in open or slightly broken ground, all first reserve ammunition should be issued before the troops extend for attack to save mules and men from unnecessary exposure to fire. If the nature of the ground affords ample cover at intervals in the advance, such issue, to save fatigue of the men engaged, might be postponed as an *exceptional* case (to be decided on the spot), but always in the case of "fighting line" the issue should be made previous to their arrival within the effective fire zone, or say at 600 yards from the position, and in the case of "supports" and "main body," previous to their reinforcing.

2nd.—That *special* ammunition be carried for *long range fire*, to make good the amount expended before advancing. That all "long range fire" be carried out by men (at least a double company) detached from main body, placed on a flank, or other favorable position, to assist in the "preparation," and cover the advance of the "fighting line," to the attack, who by this means enter into action fresh for work, with shoulders uninjured and better able to carry on an effective fire from first to last.

3rd.—That the mules, men and first reserve ammunition be told off to *each company* (or double company, if transport is scarce), and kept distinct, so as to be always ready to accompany it, the only exception being previous to extension for attack by half-companies,* when part of the main body, ammunition and mules will be temporarily transferred and attached to the "fighting line" and "supports" as will be hereafter explained.

4th.—That 70 to 90 rounds per man should be in possession at commencement of final or critical stage, *i.e.*, from 400 to 500 yards of position, after absorption of supports and main body into firing line.

5th.—That the distribution should be proportional to the time, each portion of the battalion is likely to be engaged, but not exceeding in the *aggregate* the authorised battalion allowance of 30 (or more) rounds per man. If not all issued to the fighting line with a view to save them unnecessary fatigue, the balance would be carried and handed over by supports on reinforcing. The main body on reinforcing might, in case of emergency, hand over one or two packets to fighting line and supports from their own ample supply.

6th.—That in order to be able to *carry into action* the greatly increased number of rounds modern requirements necessitate, the soldier, *previous to an offensive engagement*, should be relieved of all articles of kit not absolutely necessary for the time being to be carried under regimental arrangements. The weight of kit thus removed can, if it is

* If by one section of each company, no such transfer is necessary.

considered that much opposition and stubborn resistance will probably be encountered, be replaced by extra ammunition. Ample food for *body and rifle* should be considered as primarily essential to success.

7th.—That as soon as *first reserve* supply has been issued, immediate steps be taken to replenish from the *second reserve*, and to place the mules, etc., in a safe position, but one convenient for the ready further issue of ammunition, if required on an emergency.

I propose to distribute the ammunition in the following proportions : For a battalion 800 strong, each man having in possession 80 rounds, carried in two pouches of new valise equipment. (If required, 100 rounds in 10 packets can be so carried.)

("A")	Fighting Line	... 80 + 50 = 130
	Supports	... 80 + 30 = 110
	Reserve	... 80 + 20 = 100

This to be issued *before extending* or advancing to the attack, as follows :—

("B")

Distribution.	Fighting Line.	Supports.	Reserve.	Long Range Fire.	REMARKS.
In possession ...	80	80	80	10 or more per man available from "Special Reserve."	Previous to advance, 30 rounds will be opened out, and placed in bandolier or belt pouch (described hereafter) so as to be easily available for quick loading.
Previous to advance	40	30 } 10 }	20		Supports on reinforcing hand over 10 rounds to fighting line. In case of emergency only, the reserve on reinforcing might spare 10 rounds each to old fighting line and supports.
From Supports ...	10*				
„ Reserve ...	+x	+x	-x	Amount expended to be made good therefrom.	
Total ...	130 +x	110 +x	100 -x		

The above distribution is at the rate of 30 rounds per man, thus :—

	Men.	1st Reserve.	Total.
("C") Fighting Line { 4 half-companies 8 sections }	200	× 50	= 10,000
Supports ... Ditto	200	× 30	= 6,000
Main Body { 4 companies 8 half-companies }	400	× 20	= 8,000
Grand Total ...	800		24,000
			—30

("D") Special Reserve Long Range Fire	} 4 companies, $400 \times$	$\left\{ \begin{array}{l} 10 \\ \text{or} \\ 20 \end{array} \right.$	$= \frac{4,000}{8,000}$	rounds.
The above would require (or double)	... C—	$41\frac{1}{2}$	boxes	$= 20\frac{1}{2}$ mules.
	... D—	$6\frac{1}{2}$	" "	$= 3\frac{1}{2}$ "
Total	... 48 $\frac{1}{2}$	"	24 $\frac{1}{2}$	"

Each company of 100 at 30 rounds would require 3,000 rounds, 5 boxes, $2\frac{1}{2}$ mules, or a grand total for "C" at the rate of 8 per company of 24 mules, exclusive of "D."

But if transport is scarce, the requirements of each "double company" would be 10 boxes, 5 mules, or a grand total for "C" of 40 boxes, 20

mules, exclusive of Special Reserve "D" of $\left\{ \begin{array}{l} 6 \\ \text{or} \\ 12 \end{array} \right.$ boxes, $\left\{ \begin{array}{l} 3 \\ \text{or} \\ 6 \end{array} \right.$ mules,

per battalion.

It will be observed that, in order to simplify the issue and avoid possible confusion, due to necessity of making calculations, the above totals of 50 and 30 rounds issued to fighting line and supports respectively, are at first issued by giving 40 to each, so that if extension is by half-companies, 10 rounds to each are only required from main body reserve in addition to their own 30 rounds. [See also foot note, para. 6 (3rd-)]

Thus each company or double company would have its 3 or 5 mules, in charge of a Pioneer, carrying 30 rounds per man, with pick and shovel ready to accompany it anywhere, and in addition there would be the 3 or 6 mules for conveyance of special reserve, as abovementioned. Each mule should have a tin ticket with letter of company, etc., impressed thereon, and attached to the head stall or bridle.

8. In case of a battalion being ordered to assume the *offensive* in attack formation, the procedure would be somewhat as follows:—

On the battalion of 8 companies being told off for attack (to extend by half or quarter companies), intimation in writing, stating companies told off, in what manner and approximate strength, would at once be sent to the officer in charge of *first reserve* ammunition, who would on receipt thereof send the mules and ammunition to their companies. But, if directed to extend by half-companies, he would in addition tell off mules and ammunition at the rate of 10 rounds per man, from the companies of "main body," and temporarily transfer them to companies detailed as *fighting line*, and *supports*, which would then make the primary distribution as follows:—

Fighting Line	...	...	40
Supports ...	...	...	40
Main Body	...	...	20

which would be at once issued and disposed of as stated in Table "A" by 2 men per company with canvas bags (who would remain with the mules throughout), assisted by supernumerary rank.

If *long range fire* is to prepare the advance, the companies detached from the *main body* would at once be moved off to the position selected,

after opening out 30 rounds. At the conclusion of the firing, they would rejoin the *main body*, when the ammunition expended would be made good to them from the "*special reserve*" up to 80 rounds per man, and the *first reserve* of 20 rounds per man would be also issued.

9. As an extra precaution, to avoid any chance of confusion previous to sending the mules to the battalion, special labels of different colors, with abbreviated words or letters, signifying "*Fighting Line*," "*Supports*" and "*Main Body*," painted thereon, should be issued by officer in charge, to be fastened to the mules as told off by him, and returned when issue has been made. The 2 men per company should also have above labels issued to them, to be returned as above, and in addition should be provided with a small company distinguishing flag, about 18 inches square on a bamboo stick, one similar to which would be with each company.

10. The *first reserve* mules would be sent to the *second reserve* to replenish as soon as boxes are empty.

If more ammunition should be required it would be signalled for, the officer in charge, after replenishing, having taken up a sheltered, central position, if possible, so as to be near at hand, and the issue would be by companies in such manner as circumstances rendered expedient.

11. By this arrangement, the mules and men would actually belong to their respective companies or double-companies throughout (the transfer of 10 rounds per man from *main body*, in the case of the extension for *fighting line* by *half-companies*, being only temporary, so far as mules are concerned), and there should be no confusion.

12. The following are some of the advantages claimed for this system of issue :—

The 30 (or more) rounds per man per company are carried on the march, etc., intact. If increased to 50 rounds per man, the extra 20 rounds would be issued in addition and carried in the haversack, and the above distribution would not be in any way affected, merely entailing more mules and boxes per company. The men advance into action with that confidence, inspired by having in possession an ample supply of ammunition, and are, if necessary, relieved of all superfluous kit to save fatigue. The mules and carriers are not exposed to certain danger and risk of life. The whole should work perfectly smoothly. The long range ammunition is separately provided for, which seems absolutely necessary. At the critical stage each man would probably have 80 or 90 rounds in possession, and if the ammunition of the wounded and killed were utilised, still more, and thus there should be ample to meet all requirements and contingencies.

13. Captain Faithfull, D.A.A.G. for Musketry, in a paper on the subject,* advocates a plan, the principles of which are very similar to mine, but his details for carrying out the issue differ in the following respects :—

(a) The amount for each *company* or *double company* is apparently not kept intact, at 30 or more rounds per man, which would lead to complications.

(b) The primary proportional issue to *fighting line* and *supports* are not the same, thus less simple.

* Journal of U. S. I. of India, 1887, Vol. XV, No. 67, page 171.

(c). His fighting line at first carry 10 rounds more, or an extra 1lb weight, which my *supports* carry up.

(d). I start with my reserve at 30 rounds per man, against his at 50 per man, entailing extra carriage. The only difference in total rounds eventually proportionately issued is that only his *main body* get 10 rounds more per man, which is hardly necessary.

(e). His *main body* brings up 20 rounds for *fighting line* and *supports* on reinforcing. This amounts to 8,000 rounds. Owing to casualties in the advance up to within effective fire zone, much ammunition would never reach the firing line. I prefer that the *supports* bring up a packet or more for each man in *fighting line* (or 2,000 rounds), and the *main body*, in case of *emergency only*, might transfer one or two packets from their own supply to firing line.

(f). I provide a *special reserve* for "long range fire," which is kept quite distinct.

14. I will now consider how the above-mentioned ammunition can best be carried, and will assume that the men are provided with the new valise equipment for British troops. There are two buff pouches, carried on the belt, made to carry four packets each, or 40 rounds, but five packets might be carried if required, making a total of 80 or 100 rounds. Any extra rounds issued in packets to be carried in haversack, and open rounds as hereafter provided for. The present pouch is quite unsuited for carrying loose rounds as well as packets, and when men are in the "lying down" position, the loose rounds fall out. I would therefore strongly advocate that these two pouches be used solely for *packets* and be called *reserve* pouches, while an extra *field expense* pouch, to hold 20 rounds, be authorised somewhat of the following description :—

A long pouch of brown leather, to fasten on to waist belt and sit comfortably at right side, to hold two rows of ten rounds abreast, placed in separate partitions, just the size of a cartridge, so as to fit tightly; the base to protrude about half an inch so as to be easily grasped when loading; a flap of leather from one end to the other over top, to be fastened to a metal button at either end, when not required for loading, and to ensure safety of cartridges when on the move.

Over left breast, ten or more rounds to be carried in closely-fitting partitions, either of same material as *khakee* coat, or of leather, on a base of thin leather, to be fastened by button to coat and detachable at will. The right breast to be free from pocket and cartridges, so as not to interfere with the rifle when quickly brought to "*present*." On left side, below cartridges, there should be a large pocket with flap, and button fastening.

The above plan would enable men to load rapidly in all positions, and during a pause expended cartridges can be replaced by one or more *packets* at a time, and it obviates the objection to pressure across the chest, which a bandolier or chest-belt entails.

I have thus provided for the efficient conveyance by the soldiers of 110 or 180 rounds or more, all securely placed and easily got at when required.

15. I will now detail the articles of a British soldier's equipment in the field, their weight, and how this can best be reduced with a view to relieving him of as much unnecessary weight as possible, thus enabling him to carry a large number of rounds without undue fatigue :—

Full Field Kit.

	lb.	oz.	lb.	oz.
Great Coat and Cape ...	...	5 8		
Canteen and Cover ...	...	1 10		
Valise, full ...	...	7 12		
			14	14
Rifle ...	...	8 12		
Bayonet ...	...	0 15		
			9	11
Belt, two pouches, frog and scabbard	2	12		
Sling ...	...	0 4		
Other straps ...	...	1 2		
			4	2
Water Bottle, filled ...	...	2 10		
Havresack ...	...	0 9		
Eighty rounds of ammunition	...	9 0		
			12	8
Gives a total weight of ...	...		40	14

The following articles of kit *not being absolutely* required could be left behind previous to departure on service :—

1 Holdall.	}	Weight 13½ oz.
1 Spoon.		
1 Razor.		
1 Shaving Brush.		
1 Sponge.		
1 Pair of Mitts, according to climate.		

The following also in addition to above, in *case of emergency*, might be left with regimental baggage for a period of *one or two days*, while in contact with the enemy :—

	lb.	oz.
1 Shirt ... }	...	1 8
1 Pair of Socks ... }	...	
1 Button, Brass ... }	...	
1 Tin Blacking (dubbing being applied) ... }	...	
1 Piece of Pipe Clay ... }	4	8½
1 Set of Brushes ... }	...	
1 Valise (as no ammunition is carried in it) ... }	...	
Total ...	5	11½

A grand total of 6lbs. 8½ozs., or the equivalent of about 60 rounds of ammunition, all, or part of which if necessity arose, might be issued either on the eve of an expected engagement, and carried on the march, or on going into action, without over-taxing the soldier's strength. This, together with 30 rounds, first reserve, issued before extending for attack, would bring total ammunition in possession to 170 rounds per man, of which the Fighting Line would get 190 altogether.

Supports.	"	170	"
Main Body	"	160	"

16. The remaining kit considered "*absolutely necessary*" would be as follows :—

	lbs.	oz.
Great Coat } strapped to Dees at back of belt	...	5 8
and Cape }		
Canteen strapped to belt.		
Glengarry Cap, { In havresack in addition to		
Towel and Soaps, { two days' cooked rations, or	...	2 19½
Knife and Fork, { wrapped in towel and put		
Comb, Oil Bottle. { inside coat, leaving havresack		
		free for ammunition and food.

Total	...	8 5½
Add 140 rounds of ammunition, rifle, &c.	...	82 12
		<hr/> 41 1½ <hr/>

without food.

17. The weight carried by the sepoy in the field, including great coat, rifle, &c., and 80 rounds of ammunition (which are carried in two pouches in the new Mackenzie equipment, instead of 70 in two pouches and one bag) amounts only to about 32lbs. So that in case of urgent necessity, he could carry extra rounds. But by leaving great coat and cape in regimental charge previous to going into action, he might carry 60 rounds extra without the addition of any weight. This would be a total of 130 or 140 rounds, which should be ample, and would be distributed proportionately as laid down for British troops. Thirty first reserve and 30 extra from second reserve and carried thus: in two pouches 40, loose in expense bag 20, and over left breast 10, in havresack 60. But a quick loading field expense pouch, as already described, would be a desirable addition to their field equipment, and would reduce amount to be carried in havresack to 40.

18. In conclusion I would merely remark that I trust I have described, perhaps not very clearly but to the best of my ability, how first reserve ammunition can be effectively issued so as to ensure the minimum of exposure and danger to the party, and in such quantities as will satisfy the increased requirements of modern warfare, and how such can be carried without entailing undue fatigue on the soldier, so that he may arrive at the critical stage of the attack full of energy and fight with his pouches full.

JAPAN.

BY CAPTAIN H. B. URMSTON, 6th Punjab Infantry.

These articles are an amplification of the lecture delivered before the United Service Institution at Simla on the 5th August, 1887.

(Continued from p. 235.)

THIRD PERIOD OF HISTORY. A.D. 1199—1334.

From Yoritomo to the Ashikaga Dynasty.

Hojo Supremacy.—The third period of Japanese history commences with the growing feebleness of Yoritomo's Minamoto successors, so that the era came to be called that of the Shadow or Puppet Shoguns. Tokimasa of the Hojo family, like his predecessors among the Fujiwaras and Tairas, from being a Councillor gradually came to hold the supreme power under the title of Shikken or Regent. The Hojos were related to the Tairas, and like them traced their descent from Kuwammo Tenno, 50th Mikado. Hojo was the name of their ancestral home in Idzu. The Japanese looking back to the tyranny of the twelve successive Hojo Shikkens, who virtually ruled the country from A.D. 1202 to 1334, have pronounced on their tyrannical despotism a verdict even more unfavorable than that on the Tairas. The Shoguns meanwhile succeeded one another in accordance with Yoritomo's requirement from the Minamoto family. Two Fujiwaras and six imperial princes actually became Shoguns in succession to the three Minamotos, but every one of these eight took the name of Minamoto to fulfil the required conditions.

But the Hojo Shikkens who had aspired to the rôle, previously played in turn by Fujiwara and Taira to the Mikado at Kyoto, undertook the same in regard to Yoritomo's successors at Kamakura.

Marco Polo.—The most noteworthy events of this period were the introduction of Japan to Europe by the Venetian Marco Polo in A.D. 1298.

That traveller had spent seventeen years (1275-1292) at the Court of the Mongol Emperor Kublai Khan at Peking or in Manchuria, and had there heard of the island kingdom called Zipangu or Jipangu.

Mongol Armada.—It was at this time that Kublai Khan, having overthrown the Sung Dynasty and conquered the adjacent countries to the eastern coasts of China, sent ambassadors through the Koreans to demand tribute and homage of Japan, things to which Japan had not been accustomed. The Hojo Tokimasa enraged at their insolent demands dismissed them in disgrace. According to one account six ambassadors were sent, and six times they were rejected. Upon this Kublai Khan sent an

expedition from Corea of 450 junks with ten thousand men, who landed at Tsushima and Iki. They were bravely attacked and their commander slain. All Kiushiu had been raised to arms. The expedition returned having accomplished nothing, A.D. 1275.

Some historians attribute to the presence of Marco Polo at Kublai Khan's Court—that monarch's first information of Japan and his desire to profit by its riches.

According to another account Kublai Khan's ambassadors, sent in 1275 and 1279, were brought before the Shikken at Kamakasa and decapitated, whereupon Kublai Khan sent an armada of several thousand junks containing 100,000 men, of whom 10,000 were Koreans, sailed towards Takashima.

The fighting which took place from the shore where the Japanese felt their strength to lie, the individual deeds of prowess performed by the few against the many, the rousing of the nation to arms, and the final and complete destruction of the armada by the aid of a fearful typhoon which assisted the Japanese in their pursuit of the enemy as they fled in their junks, are graphically narrated by Griffis. Only three men are said to have escaped. This is the only record of an attempted invasion of Japan, and bears strong points of resemblance to the fate of the Spanish armada against our own islands three centuries later, *viz.*, in 1588.

On Sanetomo, Yoritomo's second son, being killed by his nephew in revenge for the supposed murder of his father Yoriya, Sanetomo's elder brother, the main line of the Minamotos came to an end, 1219 A.D. During the period of anarchy and civil war of the 14th century between the northern Emperor Ashikaga on the one hand and Go Daigo on the other, Yoshisada, a descendant of the Minamoto, attacked and destroyed Kamakura, and then in 1333 the sole rule of the Hojos terminated, and in 1338 the family had well nigh disappeared.

The latter days of the Hojo present a disgraceful spectacle of tyranny and misgovernment, Mikado, Shogun and people alike being victims to their oppression.

The attempt by the Mikado Go-toba had failed. In 1327 Moriyoshi, son of the Mikado Go Daigo, and Kusunoki Masashige, attempted to restore the Mikadoate.

Their attempts were once more unsuccessful. Go Daigo was himself untouched, but Kusunoki escaped and lived to win immortal fame.

Nitta Yoshisada.—At this time there arose another great commander and hero, Nitta Yoshisada, taking his name of Ashikaga from a fief held by the family in Shimotsuke. He became the founder of the Ashikaga house. At first a Hojo captain he deserted with his command rather than fight against the Imperial forces, and turned his troops against the Hojo troops at Kamakura itself, attacking that city on three sides, A.D. 1333. On the eve of battle, in the presence of his troops, he flung his sword into the waves, and laying before the gods his intention to regain for the Mikado his sovereignty, he prayed them to open for him a way in token of their favor. The tide ebbed and allowing his army to pass through gave spirit to his troops.

The fighting was severe and bloody, but victory finally rested on Yoshisada, who, after performing great feats of personal valour, reduced Kamakura to ashes. Meanwhile his relative Ashikaga Takauji had also gone to the Imperial Court at Kioto, and with the hero Kusonoki drew the sword at the capital and re-established imperial rule in the West. Six thousand eight hundred Hojo and heroes were slain or committed *harakiri*. The people all over the empire rose against their late oppressors and massacred them. The Hojo power after a rule of one hundred and fifty years was utterly broken.

FOURTH PERIOD. A. D. 1333-1573.

The Ashikaga Shogunate, from the fall of the Hojos to the accession of Nobunaga.

The Mikado Go Daigo, 96th Mikado, was recalled from the banishment to which the Hojos had consigned him; and the rival puppet, Kogen, whom they had set up, had retired into obscurity.

However Ashikaga Takauji, Yoshisada's relative, who had been sent by Go Daigo to suppress insurrection at Kamakura, delivered the population from the tyranny of Moryoshi, and proclaimed himself Shogun. It was not till 1338 however that the Mikado recognised him by that title. The faithlessness of Takauji had disgusted his Ashikaga relative Yoshisada, and Yoshisada was now sent by Go Daigo to chastise Takauji. Takauji, however, defeated them near Takenoshita in the Kunto, and led his army to Kioto against the Mikado, who was once more obliged to flee and find refuge in Mûdco.

At this juncture many of the Mikado's old and loyal supporters, including the brave and honorable Kusonoki Masashige, renewing their previous alliance with Nitta Yoshisada, suddenly attacked Takauji at Kioto and made him fly to his head-quarters at Hiogo. Once more the Mikado was conducted back in triumph. Once more Kusonoki Masashige was sent against the Ashikaga Takauji; but his plans were rejected and advice ignored. Obligated however to fight he was totally defeated, and committed *harakiri* at the age 43.

Of all the characters in Japanese history that of Kusonoki Masashige stands pre-eminent for pureness of patriotism, unselfishness of devotion and calmness of courage. When interrogated as to whom they consider the noblest character in their history, the unanimous answer is Kusonoki Masashige. Every relic of this brave man is treasured up with religious care, and fans inscribed with poems written by him in *fac simile* of his handwriting are sold in the shops and read by those who love to imitate his exalted patriotism.

Again Go Daigo Tenno left Kioto for refuge, and Takauji returned. He was yet a rebel, and his undertakings were unsanctioned. He consequently set up a new "Son of Heaven," Komio Tenno, or Kogen, as Mikado. The new Mikado forthwith nominated Takauji Ashikaga as Sei-i-taiu-Shogun at Kamakura, 1336.

Meanwhile Nitta Yoshisada had continued to sustain the cause of Go Daigo Tenno, but was killed in a reconnaissance near Fuchin, the capital of Echizen, where three thousand of the enemy fell upon him, A.D.

1338. Disdaining to fly he turned his horse against the enemy, and defended himself till his horse was struck down and his eye pierced with an arrow. Thereupon he drew out the arrow and with his sword struck off his own head.

Nitta Yoshisada was only 38 when he died. His heroism, chivalry and devotion to the loyal cause have secured him by the side of Yoshitune and Kusunoki Masashige a foremost place among the heroes of mediæval Japan.

Go Daigo died in 1339, Ashikaga Takauji in 1357. The prestige of the Southern dynasty dwindled with the death of the chief supporters.

In 1392, however, when its prospects seemed at their worst, peace was proposed by the Ashikaga, and the Southern Emperor was persuaded to proceed to Kioto and make over the regalia to Komatsu, who henceforward was regarded as sole and 99th Mikado, dating from 1392—1412. With this event the country began to enjoy a brief period of rest. Thirteen Shoguns of the Ashikaga family ruled from this time to 1573 A.D. It is described by historians however as a period of confused civil war.

The history of Japan cannot show a period of greater political confusion, of greater barbarism, or of misery than at this time.

Suddenly a ray of light fell upon the land from the distant west.

Marco Polo.—Marco Polo had heard of Japan, as has before been noted, in the years 1275—1292 at the Court of Kublai Khan and published his book in 1298. Columbus had studied this book, and the American historian declares his desire was not to discover America but Japan. However another Portuguese adventurer, Mendez Pinto, who had navigated all the seas discovered by his countryman, was the first European to set foot on the islands of Japan, A. D. 1542.

The reports he gave on his return to Europe sounded so strange that he was called Pinto the Mendacious.

Pinto and the Portuguese.—Pinto and his two companions were armed with arquebuses, which delighted the people. One of them on showing his flint lock to the Governor, and how it could bring down a brace of ducks, was adopted by Tokitaka as his own son, and all had honours heaped upon them. Seventeen years afterwards the whole town was abundantly provided with this arm owing to the dexterity of the Japanese in their manufacture. Hundreds of Portuguese adventurers followed, and were welcomed by the feudal lords on account of the arms and wealth they brought to the aid of their friends.

Most of the Portuguese insurgents found their way to Funai on the East Coast.

Xavier.—The trader was soon followed by the Missionary. A Japanese of Satsuma at Goa became a convert to Christianity, and afterwards Xavier's interpreter. Learning his opinion on the prospects of Christianity in Japan, Francis Xavier set sail, and with two Jesuits and a Japanese landed at Kagoshima, the capital of Satsuma, in 1549.

Early Christianity.—Upon Xavier, as upon every other traveller, the Japanese made a most favorable impression, which he has recorded in his *Epistolæ Japonicæ*. However, Xavier was soon obliged to leave Satsuma

and betake himself to Hirado, Nagato, and Bango, being everywhere favourably received. In Argo they succeeded in establishing some Christian congregations. In 1550 he set out for Kioto, although the country was full of war and roads unsafe. He was not allowed to speak either to Shogun or Mikado, and the sounds of war prevented his preaching being listened to. He returned to Funai in Bango after a stay of fourteen days, and stayed there for several months. After holding numerous controversies with the Buddhist priests, against whom the Paimio gave his protection, he finally left Japan disheartened for Macao in 1551 and died on the island of Shamkan on the 2nd December 1551.

The seed, however, which he had carried and planted soon bore fruit. He had inspired other Missionaries, whose success was amazingly great. Within five years of Xavier's visiting Kioto seven Christians had sprung up in the capital and numerous Christian communities in the South-West.

Twenty years later the number of Christians in Japan was reckoned at 30,000; and in 1581 the Jesuits reckoned nearly 150,000 adherents and over 200 churches. Seven Daimios embraced the new religion, and favored its propagation. In Hondu itself there were several Christian priests.

To revert to the history of the country. After the fusion of the two Courts in Komatsu II, the country had, as we have said, enjoyed a brief period of rest. Pirates by sea and robbers by land had till then rendered life and property unsafe. In the year 1401 the friendliness shown by the Ashikaga Shogun, Yoshimitsu, was interpreted by the Japanese as a needless humiliation to their great neighbour. He further sent presents and accepted in return the title of Nippon O, or King of Japan. This was believed by the Japanese to be done merely in order to exalt the vanity and glory of the usurping Ashikaga, who desired to be called a King but dared not usurp the Imperial throne. Yoshimitsu died in 1398 and fresh disagreements of all kinds rose; some between the powerful vassals and also in regard to the Imperial succession. The country was devastated for another hundred years. Added to the horrors of the civil war during the first half of the sixteenth century were frequent earthquakes, panics and the devastation of disease. So that in 1545, five years before Xavier visited Kioto, the place was so reduced that no one could live in it, and any one venturing to live among the ruins ran the risk of either being burnt or buried, or at least of dying by starvation. It was at this period that the light of Christianity dawned. By many therefore the latter half of the sixteenth century is looked upon as the most interesting and important epoch of the Japanese middle ages—the age of its first Christianity, of its first persecutions, of its greatest internal changes, and of the greatest development of its power.

Before entering upon it, the fourth period terminates in 1573 with the deposition of Yoshiaki, the fifteenth Ashikaga Shogun.

Nobunaga.—While the country was in this condition, devastated by civil war, Mikado and Shogun with little power, and laws without avail—a state said to baffle description—Ota Nobunaga arose, known as the persecutor of the Buddhists and patron of Christianity. Ota is a village near Fukui in Echizen, and the Ota family which took its name from it was of Taira descent.

Nobunaga distinguished himself in the wars of the times and won for himself a great renown. The Mikado Oki-Machi invited him on this account to undertake the pacification of the country, while at the same time Yoshiaki appealed to him for assistance in securing him the Shogunate. He attempted to comply with both requests, and marching with Yoshiaki the Ashikaga to Kyoto he compelled the usurping Shogun to take flight and secured the succession to Yoshiaki in 1568. Yoshiaki however soon after sent on foot a conspiracy against Nobunaga, whereupon the latter deposed him in 1573. Thus ended the Shogunate of the Ashikaga. The dignity of Sei-i-tai Shogun remained vacant till Iyeyasu obtained it for himself and his descendants.

Meanwhile, as we have seen, Christianity had struck root, and it will have been observed that the condition of the country was such as to afford a ready soil for the propagation of its power.

Centuries of misrule had reduced the people, on whom the burden of war fell, to the lowest depths of poverty and misery. Their own religion offered them neither comfort or consolation. Shintoism had sunk to a myth almost unknown to the people, while the Buddhism which overshadowed it had lost its vitality and power. It had degenerated into a commercial system, in which salvation could be purchased only by the merit of the deeds and prayers of the priests. The superstition and impostures of the Bonzes which sought to abuse the credulity of the people and crush their excesses found little sympathy in such spirits as Nobunaga. On the other hand the new reformers introduced with a blameless life and holy earnestness a large heated benevolence for the poverty and miseries of the common people, who saw in the new faith a deliverance for the future, if not a paradise in the present and a home for the aspiration of their hearts. The Jesuit order had been founded in 1542, the year of Pinto's landing.

A further ground for the rapid spread of the new religion lay in the community of rites between the old and new order of things. The adoration of images, incenses and the mass, vestments and rosaries, pictures and altars, beads and indulgences, relics and celibacy, monasteries and convents, processions and pilgrimages, together with priestly hierarchy and much besides were found in common between Buddhism and the new Christianity.

At the same time it must be borne in mind that the primary cause of welcoming the Portuguese was rather the merchandise, of which their firearms formed so important a factor than the Christianity which accompanied and followed them. These however being simultaneously introduced were always associated with each other, so that the fear of the one instilled respect for the other.

FIFTH PERIOD. 1573—1603.

Accession of Nobunaga to Sekigahara, and accession of Iyeyasu.

The Ashikaga Dynasty had ended. Nobunaga's assumption of power gave the country order and security and quietness. Roads were repaired, and attention paid once more to the internal development of the country. In recognition of these deeds the Mikado conferred upon Nobunaga the Taira the title of Udaijin, and he in turn loyally strove to govern the country in the Mikado's name.

He was however thwarted by the rivalries of other families, and by the influence of the Buddhist priesthood.

Finding these the chief obstacle towards crushing the power of his opponents, and that the mountains had practically become fortresses, he took up the sword to destroy them.

In 1571, he had bidden his generals to destroy Hiyesan and its monasteries, notwithstanding the plea of their antiquity and lofty fame. He pointed out the corruption that prevailed in them, and nothing was spared by fire or sword.

In the later siege of the immense fortified monastery near Zoka called Hon-gwangi, some 20,000 of the garrison were either slain or burnt before it was surrendered to the besiegers.

The Buddhists consequently looked upon Nobunaga as a demon and persecutor, and the Bonzes became his declared enemies.

The Jesuits on the other hand (as in their History of the Church) are full of praises for the brave and bold prince, who was a lover of justice and patron of their cause.

He is acknowledged to have had an unbounded ambition, and must be regarded rather as the foe of Buddhist monasticism, whose power he crushed, and protector of Christianity, rather than a friend of the faith to whose spirit he remained a stranger.

Meanwhile Christianity flourished and grew. The Daimios of Bungo, Omura, Arimima, Amakusa, Hirado, and the Goto islands had embraced Christianity. The Daimio of Tosa had become a Christian in 1576 in the teeth of much hostility. In Nagato and Sawo there were many Christians.

In 1582 the Daimos sent a Japanese embassy to kiss the feet of Pope Gregory XIII, and thence on to Lisbon to pay their respects to Philip II. They returned in 1590.

The Jesuits had called the Daimos Kingo, and this great victory over a cultivated heathen people in a distant realm who had been won over to the true fold excited joy, exultation and wonderment in the whole Christian world.

Meanwhile the bright sky had changed in Japan, and signs of storms already appeared in the heaven. Nobunaga had built a splendid temple near Kioto, and caused reverence to be done to it by his son, vassals, and people. His favourite General Hideyoshi required reinforcements against the still powerful Mori. Nobunaga despatched Akechi Mitsuhide, a proud, brave man, who however had taken mortal offence against Nobunaga. Instead of reinforcing Hideyoshi he denounced Nobunaga to

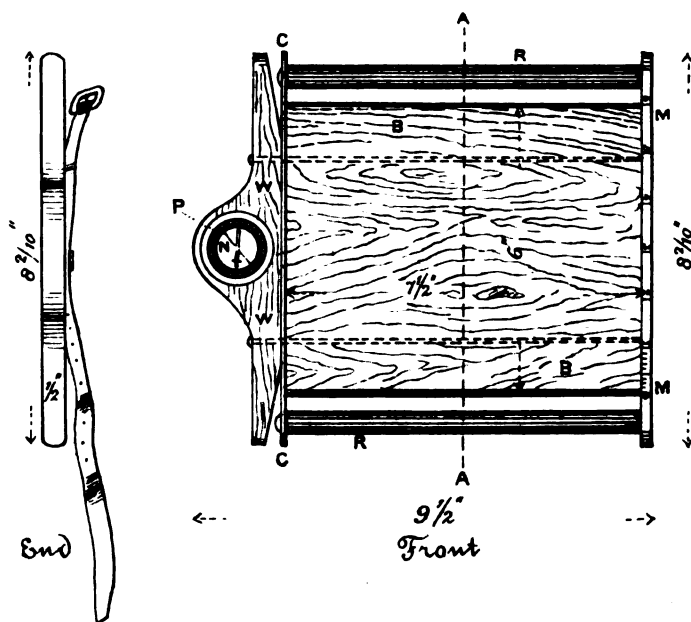
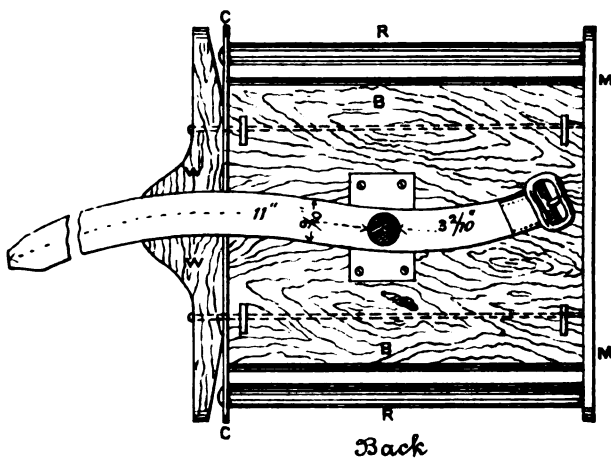
his captains as a mocker of the gods, and promising them rich booty won them over to his treacherous plans. They returned to Kioto and surrounded Nobunaga in his temple. Wounded with an arrow in the shoulder he set fire to the place and was consumed with it, A.D. 1582, aged 39.

On Nobunaga's death the situation was as follows: His third son Nobutaka ruled over Shikoku. Shimadgu was fighting with Oltimi in Kiushiu. His chief general Hideyoshi with Nobuwo, Nobunaga's second son, was fighting with Mori, the prince of Choshin in the west. Iyeyasu, who ruled eight provinces in the Kunto, was in the field against the Hojo. Shibata, a third general, deepened the river and dug many hundreds of the canals which have caused some to call Osaka, the Venice of Japan. It has now upwards of eleven hundred bridges. He further fortified Fushimi, the military outwork of Kioto. In 1540 he sequestered Nagasaki from the Daimio of Omura, even then a flourishing port, and made it an imperial town. His rule was highly popular, for he restored peace to the country, re-established law and order and was independent as well as great. In 1586 he received from the Mikado the title of Kuwambuko or Regent. His humble origin and want of a pedigree was the stumbling block to his advancement. He tried in vain to trace his line and continued to maintain a good understanding with Iyeyasu and Mori, the two most powerful vassals of the country, whom he induced to come and do homage to the Mikado. He further cemented his reconciliation with Iyeyasu by offering the latter his sister for his wife. Meanwhile the old Hojo chief Ujimasa of Odiwara, the capital of the eight provinces he governed in the Kunto, declined to present himself at Court.

Hideyoshi received permission to fit out a large expedition against Ujimasa, organizing it in three divisions. The expedition was entirely successful. The Hojo castle was captured and Ujimasa himself killed, A.D. 1590.

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THE "FIELD SKETCHING" BOARD*: HOW TO USE IT.

By MAJOR H. A. SAWYER, B.S.C., A.Q.M.G., I.B.

Description and Make.—The ordinary pattern is made as follows (see diagram): To a $\frac{1}{4}$ -inch light wooden board (*B*), seven inches long (measured with the grain) and six inches wide, are fastened at one end a thick strip of gun-metal (*M*) and to the other a thinner piece of copper (*C*), each protruding at either end an inch beyond the board. Near each end are bulged holes as sockets to take the ends of "rollers" (*R*). The copper strip being thin and elastic permits of the rollers being pushed into their proper places, and taken out at will by merely pressing the copper ends outwards.

The friction between these bulged holes or sockets and the ends of the rollers prevent these from unrolling of their own accord.

As a protection to the copper strip, and as a socket for the needle compass (*N*), is further attached a wooden piece (*W*). These three pieces, *M*, *C* and *W*, are bolted together by bolts that run through the board (*B*) (shown in dotted lines). In the centre of the board at the back is a leather strap which can revolve round a flat copper nail head. The sketching board weighs one pound. It is strongly built, and can stand a good deal of knocking about.

Recently a lighter kind has been made with no metal about it except the spring copper strip. The compass is smaller and the whole affair less than half a pound in weight. It is quite strong enough, and the difference in weight is of much more importance than generally supposed. I would strongly recommend the more modern and lighter kind for ordinary use; moreover it is half the price of the former. These are now made in Calcutta in the Mathematical Instrument Department.

To each case is generally added a flat ruler, 10" long, 1" wide, as also two broad India-rubber bands.

The compass is fixed and lies flush with the surface of the board. It has a glass cover that can be made to revolve horizontally by pushing a small metal point (*P*), from which point is struck a clearly-marked diameter cut in the glass. Thus *P* and the glass and the diameter revolve together. This diameter I shall call the "glass meridian." As the case is generally held in such a manner that the compass is to the left I shall further call *B* the upper roller and *R* the lower roller. The imaginary line passing through the centre of the two rollers I shall also call the "axis" (*A A*).

To prepare it for use.—Drawing paper must be cut into strips just a little less wide than the clear length of the rollers. These are

* Known also as the "Cavalry Sketching Case."

generally split in two pieces, the angle of the cross section of one being about 270° and of the other 90° . One end of the strip of paper must now be turned down about half an inch on to that side of the paper on which it is intended to draw; place the smaller piece of the roller into this "turn down," and place these, *viz.*, paper and the small piece of the roller, into the bigger piece. Hold all this tight together, place the back of the paper on to the board, and then the roller into its inelastic socket; lastly, the other end into the copper spring socket. Take a sharp knife and cut off any pieces of paper where they protrude from the roller's slit. Now roll up tight the whole strip of paper. The paper must move from the upper surface of the board to underneath the roller; this protects the drawing from being smudged. An elastic band placed over the paper and board at *D* will prevent the paper from unrolling. Treat the other end of the paper in the same way. Give it two or three turns, and affix the other rubber band at *E*. The bulk of the paper must be on the "upper" roller to start with. The board is now ready to be "set."

"How to Set."—"Setting" the board is merely for the purpose of keeping the work as much as possible in the centre of the paper (*viz.*, near the axis). This is made much of by instructors, and is a source of anxiety to the beginner. At an examination I have seen an unfortunate rub out 3 miles of work and ride back to start afresh because he ran off the paper! As will be shown later on, a bad "set" can be remedied without rubbing out a stroke. It looks well no doubt to have a 9-mile sketch on 6" to a mile in the centre of a strip of paper; it is perhaps a sign of a good set (if the road is not very tortuous), but it is of little moment in practice. To lay stress on it is mere pedantry.

(a) *To "set" without a Map.*—If standing on an elevation and you can see for some way the general alignment which the work (a road) will take, place the "axis" in the alignment (compass to the left), and when the needle is steady slightly tilt the board (to fix the needle); then, by turning the point *P*, make the "glass meridian" coincide with the needle. On a scale of one mile to an inch such a "glass meridian" will hold good for any turns of the road reaching 3 miles to the right and 3 miles to the left of its general direction.

(b) *To "set" with a Map.*—If a small scale map is given, and on it are given two points, say *X* and *Y*, ten miles apart, the road joining which is to be sketched, place the board with its "axis" on the alignment *XY* on the map. On the map draw a magnetic meridian, allowing for the correct variation for the year and place. Now make your glass meridian coincide (parallel) with this magnetic meridian, and the board is "set."

"What Material to use."—Any smooth-surfaced tough paper is the best. It takes less dirt, smudges less, and is best for after treatment. Cartridge paper is excellent. Its yellowish surface is not so trying to the eyes as pure white paper. For much out-door work I always prepare my "rolls" (strips cut to the width of my board kept, rolled up ready for use) by dipping them into a light solution of indigo. Bankpost rolls should always be at hand. They are most useful when only ferrotype

reproduction can be counted on. When using Bankpost paper cover the surface of the board (underneath the roll) with a piece of white paper. Never use ruled paper. In theory it is splendid, in practice for this work an abomination; pencil, pen and ink are the only legitimate materials for drawing with for military purposes in the field. Rubber elastic bands, broad and large, should be kept in stock (on person); on the edges of the ruler you can have scales of walks, trots, canters, time, yards. The ruler is sometimes convenient, but more often not. I have discarded it altogether for a piece of cardboard, about 2 inches long, one inch wide, properly scaled and varnished over. Tied by a strong thread (half a yard long) to the right-hand upper corner of the board, when not in use shoved under the top elastic band, it can never get lost, and is always handy. Practice soon allows of the longest "shoots" being made perfectly straight freehand.

Robertson's Liquid Indian Ink is first class. I have a little left in a bottle I first opened in 1883. It is still in perfect order. The Baboo's ordinary pointed steel pen is best of all.

"How to carry it."—When at work the board is meant to be strapped round the wrist or forearm, but my advise is try first any other way but that, for it is a most uncomfortable, trying and unsteady method. I always hold mine between thumb and forefinger of left hand, but keep the strap (unbuckled) firmly in the hand at the same time to steady it. When not at work the board should have a leather case and strap to pass over the shoulder, but the strap should be then shortened so as to bring the case close under the armpit. Some strap the board when done with round the upper arm, but I don't trust any leather in this country. I prefer a hayresack to anything else. Mine holds board, pencils, ink, pens, rubber bands, foolscap (2 quires), rolls, sufficient for 1,000 miles of road (on one inch).

Measurement used.

(a) *Linear.*—Counting the horse's paces or taking his rate of progress by time are the only methods used for measuring distances when using this sketching board. The most accurate of these is, of course, counting the horse's "walk." Which to use, is regulated by the rule "Be as accurate as time permits." If you are marching with troops, for instance by ordinary marches, you know you have 6 or 7 hours to do the 10 or 12 miles in. Make "walks" your scale for the forward alignment, trots and canters for offsets. Always have an orderly (mounted if possible) on the spot you set off from. Some allow the counting to be done by others. This, however, always turns out unsatisfactory. Counting a horse's "walks" is as accurate as pacing on foot if proper allowances are made. Every horse has his own "allowance." For an English horse I had I was obliged to allow (possibly owing to this country), even when in good condition, at a "walks" one per cent. per hour, that is, after five hours on the road he stepped five per cent short; with quick "walk and trot" work double that amount. A Yarkandi I have requires no allowance, even after carrying me the whole day. Allowances must also be made for the nature of the soil, slope of track,

&c. In pebbly river bed (like North-western Frontier) horses walk tenderly and short; ditto on sloping ground. Some horses step out ten per cent. at once when joined by another horse on the road and lag again when alone. With rifle ranges, mile stones, railway and telegraph lines, near every cantonment, there is no excuse for an officer not knowing his horse's paces and "allowances" at all times of the year. Hurried "galops over" can, of course, only be done by time. It is not generally credited how accurate this, too, can be made. In "general reconnaissances" extending over many hundreds of miles, even when the dead reckoning is unchecked by astronomical observation, the error need be only very small. In such a recent tour the dead reckoning (unchecked) of an Intelligence Branch Officer's (Bell) work was found to be only 10 miles out after a run of 600 miles.

The Germans in their regulations lay very little stress on accuracy, and the latest on the subject (May, 1887) only require a freehand sketch (plan) not drawn to scale.

Our conditions, however, are different, for wherever the German fights he does so with a perfect ordnance map of the theatre of war in his hand. We work generally in the wildest and most desolate parts of the world, hence the requirement in our army that every officer should be able to do something in the field sketching line.

Between the accurate "walk" sketch and the freehand sketch plan of the reconnoitring officer made at a galop pursued by enemy's scouts there are many phases of accuracy. The phase to go in for must be left to the judgment of the individual, but always enter on your sketch the reliance that should be placed on the measurements given.

This is most important because, if a good draftsman and you submit a pretty sketch, you will *primâ facie* carry more weight than a less talented draftsman, who having had more leisure had the means of making really more accurate measurements, lineal and angular.

It is wonderful how "eye wash" goes down with the uninitiated.

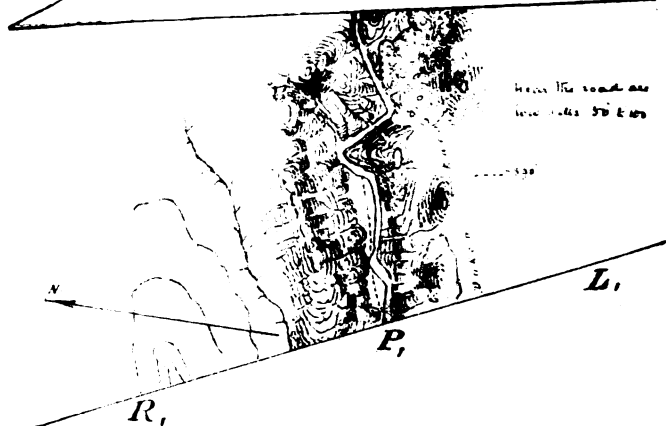
(b) *Measurements, Angular.*—The beginner is taught to lay the ruler on the new alignment; keeping his eye on the needle and "glass meridians" to see that these coincide; then to draw his pencil along the ruler. A little practice will show him that he can dispense with the ruler and then he can draw a straight line towards the distant object freehand.

A very fair triangulation can also be made with the sketching board, quite as accurate as any work with a prismatic compass. Try it two or three times on foot, making a circuit from $\frac{1}{4}$ mile to 6 miles or more, and after a while you will find that you will close on your starting point in a remarkable manner.

Work in General, Style, &c.—Complete your sketch as you go along in pencil; do not trust to filling in details afterwards. Make full notes on margins in a neat and finished style. Be sparing with your India-rubber. If you have time to make a full and detailed sketch of a road, the regulation additional written report, beyond a few general "summing-up" observations, is quite unnecessary. The sketch should show everything of military value, and omit everything of no military value. At any time in one's work one may meet with an accident.

Juniper Trees with
Savins feathered
about. Water in
blow hole.

Juniper Trees -
This plateau is a good
growing ground for
Savins. The wood
grass and water found
in a small force making
for the summer months.



The sketch should therefore at all times be in such a guise that it can be taken up and finished by another at a moment's notice.

Hills should always be hachured in on the spot. That mezzotinting business is all very well for "schools of instruction and garrison classes," where generally nice pieces of ground are selected and drawn on scales large enough to show an ordinary-sized flower-pot. The field sketching board implies real business free from examination "eyewash." All coloring and mere prettiness should be rigorously tabooed. But withal neatness and good draftsmanship are essential. It is a mistake to think that hachuring takes time. On the scale used in the field a few strokes of hachuring can be put in rapidly on the spot, showing the character of the hills and undulations at a glance. The one-inch, half-inch and quarter-inch* scales should always be practised. I give a specimen of a half-inch scale in diagram (II). This is a reduction by photo-zincography of a portion of a one-inch reconnaissance, but it will be seen that there ought to be no difficulty in drawing it at once on the half-inch scale.

As already remarked beginners show much anxiety about a good "set" and about keeping their sketch in the centre of the paper. For an "eyewash" sketch I admit it pays better, but for practical work I think that to hug one side of the paper without detriment to all the ground one is able to bring in, has the advantage of giving more room for written remarks, or making freehand illustrations. Drawings made without this "field board" are often most inconveniently large sheets of paper, with additional pieces gummed on wherever the road "runs off" the last piece. Such work is a nuisance to everybody, besides being impracticable in the field. The field board saves us from all this, and any road, however tortuous, however long, can be brought on a strip from two inches to six inches wide, according to the scale used.

Whenever the drawing approaches the margin of the paper so close that you are not able to show all you want to, merely draw a line ($L R$ in diagram II) at right angles to the alignment on which you are at the moment standing, and draw in every detail neatly up to that line on both sides of the road. Then from that point (P) "re set" your board for the same or a new alignment, bringing it (that point P) as a fresh starting point into the centre of the board, as if starting *ab ovo*. Through this new point (L) draw another line ($R L$) at right angles to the new alignment. These will be "joining lines." Whenever a new "set" is made don't forget to enter close to these joining lines the "old" and the "new" north points." The angle formed between these two "north points" and the "joining lines" must be the same. When it is required to show the road unbroken, the blank spaces between the "joining lines" have only to be cut out, and it will be found that the "north points" will all be parallel.

Should the reset have to be made where the ground is intricate (and this is, of course, often the case) it may be convenient to put in the

* Viz., one mile, two miles and four miles to an inch.

ground, in duplicate, beyond each joining line. In this way, by continually resetting, a sketch can be continued *ad infinitum* without inconvenience on a very narrow strip of paper, which is handy and compact.

To finish.—When at leisure, every evening, if the work extends over several days, I at once ink over the pencil drawing and marginal notes of that day. Anybody can do that for one if the above rule of *finishing* in pencil as one goes along is carried out ; still it is more satisfactory to "ink over" oneself and at once. An hour suffices for the heaviest day's field work. Colors should never be used if there is any chance of the sketch being required for reproduction.

Before inking in roll all the papers on to the upper roller, leaving the commencement of the pencil work in centre of board. Now begin to ink in. Go carefully over every pencil stroke and resist imagination. If it makes it clearer add to the remarks in the margin. Every six inches or so draw (freehand) a line showing divisions of 100 yards or 1,000 yards ; miles or their approximations should always be entered on the road itself. As often as possible put in the aneroid altitudes. Don't disfigure your sketch with imaginary tape-worm-like contours, for they are worse than useless. To show the wave of ground use horizontal hatching ; for rocky precipitous ground vertical hatching ; for anything between the two use both methods. Show by your work the character of the ground. On every elevation give an estimate of its height over the road track where nearest to it. Make symbolic distinctions between your *estimates* and *aneroid readings* ; never omit the "glass meridians or north points" near every "joining line." Enter your name in full and state the time you had at your disposal, or the rate at which you worked, and on mature reflection your opinion of the value of your measurements, for you might have had a strange horse, or a bad compass, or a worthless aneroid, or what is far worse you might have been "put out" before or during the work !

Conclusion—The sketch is now ready for submission. The "report" ought to be exceedingly short ; in fact I cannot conceive the use of one at all if a walk reconnaissance has been made. Of course the less ample the sketch the more essential the report ; but never repeat in your report what you have already shown in your sketch. A report for "route compilation" is another matter, and has nothing to do with a "sketch report."

With a little practice the "Field Sketching Board" can be a handy and valuable instrument in most officers' hands. It is now cheap, and can be obtained in India or made up in any regimental workshop. It can, moreover, be improvised without difficulty. An ordinary one-inch compass, which can be bought for a rupee, fixed firmly into the side of a thick piece of mill board, 8" x 10", with two elastic bands, will answer almost as well. A bazar mistri can easily put in a revolving "glass meridian." Wilkinson's patent (A. & N. Coop. Stores, price about 10 shillings) is a capital little compass ; it is made for this very purpose ; of being easily fastened to a thin wooden or mill board.

The principles of surveying taught at our schools of instruction are equally applicable to reconnoitring with the field sketching board, so nothing

need be said about that here. All I would point out is that, though with the above hints and his previous garrison course training any fair draftsman can learn how to use it by himself, some practice will be required before he can work rapidly. It is hard bodily work, and has the advantage over some other bodily exercises of being intelligent work as well.

REVIEW.

TEXT BOOK ON GUNNERY, 1887.

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This work consists of two parts, the headings of the chapters being as under :—

PART I.

Chapter	I.—Definitions and Units.
"	II.—Internal Ballistics.
"	III.—General comparison of Guns.
"	IV.—Steel for Ordnance.
"	V.—Principles of Gun Construction.
"	VI.—Details of Gun Construction.
"	VII.—Laying.
"	VIII.—Stresses on Gun Carriages and Recoil.
"	IX.—Atmospheric effects on firing Guns.
"	X.—Muzzle Velocity.
"	XI.—Twist of rifling and Drift.
"	XII.—The Resistance of the Air.
"	XIII.—Trajectories.
"	XIV.—Accuracy of Fire.
"	XV.—Range Tables.
"	XVI.—Armour.
"	XVII.—Penetration of Armour.
"	XVIII.—The penetration of Earth and Masonry.

PART II.

Chapter	I.—Gunnery Instruments.
"	II.—The strength of Guns.
"	III.—Bashforth's Tables and Coefficient K.
"	IV.—Trajectories at any angle of elevation.

Gunnery Tables—Tables I to XIX.

The above table of contents will give an idea of the very complete character of this work, embracing every branch of scientific and practical gunnery.

PART I.

CHAPTER II.—This chapter contains accounts of experiments for determining the pressure and temperature of fired gunpowder, chiefly carried out by Captain Noble and Sir F. Abel, names well known to every gunner for their scientific researches in gunnery. The questions of "expansion in the bore" and "gravimetric density" are here treated of, and several examples are worked out.

CHAPTER III.—After discussing the general comparison of guns gives a summary of the progress of late years :—

S. B. Guns.—Were made of good materials, with great care, and subjected to rigorous proof.

R. B. L. Guns (screw).—Increase of manufacturing skill and knowledge of metallurgy introduced these guns, with moderate velocities but great advantages in range, accuracy and increased shell power.

Muzzle Loaders and Heavy Guns.—It being considered that the R. B. L. system had many objections and was unsuited to heavy guns * M. L. guns were adopted with hardly any increased velocity, and attention was given to attaining power by making very heavy guns.

Greater energy without increasing calibre.—It became gradually recognised that the velocities of the projectiles must be increased; this was done by improving the strength of guns, by higher charges as in the 16-pr., and by larger bores as in the 9-pr. of 6 cwt.

High velocities.—Latterly great attention has been paid to the quality of the powder. By air-spacing and chambering very large charges can now be burnt, whilst a well-sustained pressure is maintained on the projectile, and it leaves the bore with a high velocity, ranging far and accurately.

CHAPTER IV.—Deals with the produce of iron and steel of different countries, the properties of steel and the various methods of its manufacture. Its various uses for military purposes, such as ordnance, gun carriages, projectiles, armour and ships, is then discussed.

CHAPTER V.—Treats of the principles of gun construction under the various headings of "Initial Stresses," "Shrinkage," "Wire Guns," "Cast Guns," Longitudinal Strength. It considers chiefly the general nature of the stresses and strains to which a gun is subjected on firing and the means taken to meet them.

CHAPTER VI.—Deals with the details of gun construction, and discusses the questions of breech and muzzle-loading guns, grooves, twist, vent, chamber, grip, choke and stop, bore, liners, gas-escape, breech fermeture, obturation, trunnions and ordnance in parts.

CHAPTER VII.—This is an excellent chapter of a very practical character, and should be studied by all gunners, for it should never be lost sight of that the object to be attained by all artillery is accuracy of fire, and that unless this desideratum is attained the finest battery in the service is practically useless. This is a point which I regret to say is not sufficiently kept in view in our service, and demands the earnest attention of all concerned. The real merits of a battery are apt to be lost sight of in a search for what may be termed eyewash; inspecting officers rarely trouble themselves about the shooting powers of a battery.

As Prince Hohenlohe says in his letters, "artillery must in the first place *hit*, in the second place *hit* and in the third place *hit*."

CHAPTER VIII.—Deals with the stresses produced by discharge and which are expended destructively on the gun carriage and in producing recoil. These are :—

(I) In a vertical plane through the axis of the gun.

*Note by reviewer: To this utterly false idea, which was prematurely come to away to the complicated nature of the Armstrong gun, we are indebted for having had only M. L. guns whilst other countries have had B. L. guns, and we have consequently been for a long time years behind the age.

(II) In a vertical one at right angles to the first.

(III) In a horizontal plane.

It further explains the various methods of checking recoil, such as—

(I) Moncrieff's system of disappearing carriages.

(II) Check ropes in mountain guns.

(III) Hydraulic buffers.

(IV) Hydro-pneumatic carriages.

CHAPTER X—Explains the method of ascertaining the muzzle velocity of guns, upon which their effective action so largely depends. Bashforth's and Boulengé's chronographs are the best known instruments, with which all gunners are more or less familiar.

CHAPTERS XI, XII & XIII—Deal with "twist of rifling and drift" and "the resistance of the air" and trajectories, and do not contain much that is very new.

CHAPTER XIV.—This chapter cannot fail to convey instruction of a useful character to all who study it.

It first treats of the *causes of inaccuracy, viz. :—*

1.—Want of accuracy in the gun and variation in the mounting.

2.—Want of uniformity in the ammunition.

3.—Errors in laying.

4.—External causes, such as wind, &c.

It then deals with the question of ascertaining the "range and accuracy" of guns on their introduction into the service and the subjects of—

(I) Probable zones,

(II) Employment of probability table, with numerous examples,

(III) Small arms,

(IV) Accuracy on service,

(V) Range finders,

(VI) Ricochet fire,

(VII) Shells bursting on graze,

(VIII) Accuracy of shrapnel shell fire—

are all discussed at some length.

CHAPTER XVI.—Is a very interesting one on armour and its uses for military purposes, such as land defences, armoured trains and ships of war.

CHAPTER XVII.—This chapter, with the present extensive use of armour, both for naval and military purposes, conveys valuable information regarding the results of, and conclusion arrived at on, the latest experiments in the penetration of armour plates; it further gives examples of the theoretical calculation of penetration of armour plates, the formulæ for which are more or less empirical.

CHAPTER XVIII.—Contains much useful information on the penetration of earth and masonry, dealt with under the headings of—

Breaching hidden scarps.

Curved fire from guns.

Penetration in various substances.

Breaching visible earthworks.

Silencing the fire of guns.

High angle fire.

Steel common shell and shrapnel shell fire.

PART II—Deals entirely with the scientific and mathematical side of gunnery; its mysteries are beyond the pen of the writer of these lines. No book on gunnery would be complete without these four chapters; but they are for the few, and not for the rank and file of, artillery readers.

Major Mackinlay's work is most carefully prepared, and deals with scientific and practical gunnery in all its phases. A perusal of the work cannot but leave the reader a wiser and sadder man, wiser by the knowledge he has acquired and sadder at the sense of his own previous ignorance of the subjects treated on.

E. R. E.

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